The Role of Safety Culture in Empowering Safety Behavior at Rail Transport Industry in Malaysia: A Review of Literature

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Abstract: The awareness on safety culture and behavioral safety is in higher demand to reduce occupational incidents. For instance, safety culture is an essential element that could influence employees' occupational behavior. The increasing number of passengers over the past few decades is evidence of the rapid regional development facilitated by the expansion of the railway industry. It has been implemented to alleviate congestion on highways and airways, as well as to promote global efforts to cut the emissions and employ sustainable energy. However, the inadequacies in the railway industry's safety culture implementation led to a number of events, including train derailments and collisions, which has contributed to an increase in the rate of occupational accidents. Therefore, the objective of this study is to review the literature on the safety culture as a role in empowering the behavior of railway employees towards safety performance. Thus, the quantitative research design will be conducted through close-ended questionnaire. The sample of this study consist on employees that working in Malaysian rail transport industry. Therefore, SmartPLS will be used to test the model. Moreover, the findings expected to acknowledge an extensive literature review to propose a conceptual framework. It will be accomplished through integrating safety culture into the perceptions of workers, which is expected to influence their safety behavior at workplace. Thus, the Malaysia rail transport industry and related party can use this study as recommendations to improve their safety culture practices.

Keywords: Safety culture, safety behavior, safety performance, regional development, rail industry

1. Introduction

Rapid urbanisation has enhanced productivity in the global economy, putting enormous demand on industry to ensure worker safety, health, and well-being. In response to this issue, numerous sectors have enacted rules, standardised operating procedures, and documentation, in addition to promoting the utilisation of cutting-edge technologies by cultivating a culture of safety. Nonetheless, safety management practices encounter persistent challenges as indicated by the alarming rate of incidents. Investigations on Occupational Safety and Health (OSH) from the World Safety and Health Statistics (2013-2016) through International Labor Organisation (ILO) revealed that occupational injuries with the most fatality prevail from Asia and the Pacific region compared to Europe and Central Asia region. The discrepancies are due to the countries varying economic development levels, such as in Asia, where an increasing share of production results from rapid industrialization (Takala et al., 2014). Similarly, Malaysia underwent fast industrialization, with manufacturing, mining, and electricity industries dominating the rise of the Malaysia's Industrial Production Index (IPI) (Department Of Statistics Malaysia, 2020), which has an indirect impact on the trajectory of occupational incident rates. The Transport, Storage, and Communication sector become the fourth-highest rate of workplace accidents in this recent year (Department of Occupational Safety and Health, 2023). The actual issue facing by transportation sector is now being revealed by recent trends in statistics, and railway operations are no exception. Studies have shown that certain organisations are reluctant to adopt a safety culture, which leads to management conflict and shifts the trend in injuries or accidents, demonstrating a flawed safety culture (Nielsen, 2014).

Therefore, limited research has been conducted on safety culture literature with regard to the definition or content of the term (Fernández-Muñiz et al., 2007; Guldenmund, 2000; Van Nunen et al., 2018), safety climate and perceptions, as well as insufficient evidence of literature in Malaysia (Van Nunen et al., 2018), including the behaviour of workers (Gunningham, 2013) and intervention with current OSH strategy, particularly in rail transport industry. This clearly demonstrates the insufficient safety culture that required action to fill this gap. The importance of safety in this field cannot be compromised. A safe and reliable rail transportation system can only be achieved via the establishment of a firm commitment to safety among employees and passengers.

1.1 Overview of Malaysia Rail Transport Industry

1.1.1 General Operations of Rail Transport Industry

The general operations of the rail transport industry in Malaysia encompass a variety of activities and processes that facilitate the efficient and secure transit of passengers and commodities. There are some essential characteristics of the Malaysian rail transport industry's general operations such as railway network that consist of KTM Intercity, KTM Komuter, LRT (Light Rail Transit), MRT (Mass Rapid Transit), and ERL (Express Rail Link). These networks connect several regions of the country, providing both urban and intercity transit (Prasarana Malaysia Berhad, 2023).

Besides, train operations in Malaysia entail the movement of trains along predetermined routes according to predetermined schedules. Trains run on a set schedule, departing, and arriving at numerous stops around the network that include commuting, intercity travel, and tourism, as well as freight services for delivering commodities. Moreover, maintenance and repair actions are carried out on a regular basis to maintain the safety and dependability of railway infrastructure and rolling equipment. This includes track inspections, signaling system maintenance, train maintenance and service, and repair work to address any problems or damage. Thus, implementing a safety culture frequently requires a constant balancing action between efficiency and safety (Nævestad et al., 2018). This complexity of everyday operation necessitates concerns on promoting safe working practices via empowering behavior.

1.1.2 Rail Transport Industry and Economic

The Malaysia economy was significantly influenced by the rail transport sector, which made it support urban development. LRT and MRT rail transportation systems encourage urbanisation by giving commuters dependable and efficient transportation options. Because of its enhanced accessibility to places of employment, educational institutions, and commercial hubs, urban regions experience increased economic activity and the expansion of businesses and services that contribute to economic growth in various sectors (Mohammad et al., 2013). Moreover, significant investments are required for the building and expansion of railway networks, therefore industry contributes to infrastructure development. These infrastructure projects encourage economic activity through the creation of jobs, the generation of revenue for workers, and the promotion of economic growth in construction and allied industries (Proctor, 2014).

While the world faces the Covid-19 pandemic, this industry has been severely affected. It was shown when Malaysia had to delay and change several ongoing rail infrastructure projects, albeit the Kuala Lumpur-Singapore High-Speed Rail (HSR) project had to be cancelled (Ishak, 2021). This obstacle requires Malaysia to paid RM320.27 million to Singapore for costs incurred during the development of the HSR project and the prolonging of its suspension. Besides, as a result of the decline in passenger demand caused by the imposition of movement restrictions and lockdowns, rail operators have experienced a decline in revenue, which has impacted on their business operations and financial performance. This scenario demonstrates that the rail transport demand is a relatively predictable function of economic activity. However, government support has mitigated some economic effects. As the situation progresses, the rail transport industry has the potential to contribute to Malaysia's economic recovery by promoting safe and sustainable transportation options and supporting numerous sectors dependent on rail services. Therefore, a major benefit from this industry towards economic activity and economic growth contributes to the reasons of this discussion conducted.

1.1.3 The Growth of Regional Development

The transport industry has become a vital part in its contribution towards the growth of the city. The cities or any of urban areas that depend on the transport sector experienced the rapid increase of the urban economic and social, urban infrastructure, regional and national development, which has strong association with city's economic growth. Specifically, the urban spatial is continuing growth which supported the development of the regional and city in several areas. Due to the presence of a robust rail network, the region that develops through rail transport is characterised by the development of rail-related facilities such as manufacturing, construction, logistics, and tourism. Furthermore, the contribution of rail transport sector not only covers this main industry but gradually expands on urban spatial towards others urban development (Kaza et al., 2011). As an example, expand of urban spatial triggered development of common urban infrastructures such as public facilities. It includes roads that connect throughout the city. This present by providing efficient and reliable transportation options for commuters, MRT, LRT etc. In addition, the other

development comprises the construction of regional areas and several remote sub-districts through the expansion of railway networks via its infrastructure development. Development in regional areas attracts the investor to make investment on others economic activity such as manufacturing, retail or even services sector.

This regional development from rail transport activity enables economic growth towards the entire city due to commerce activities, government offices, local housing, business, rail stations and other industries. Regional development also influences the socioeconomic through increases the quality of life, employment of local labors, increases populations, proper higher education and increasing local competitiveness and productivity (UNDP et al., 2017). As evidence, several cities significantly faced the growth of local economic based on rail transport activities (Proctor, 2014). This has been demonstrated in Sector Theory that urban development is influenced by the availability of a road network or adequate accessibility such as railroads and highways (Hoyt, 1939). Thus, referring Sector Model by Hoyt identify that the accessibility to transportation services such as rail stations can have an impact on the land or property values that leads to the growth of Center Business District (CBD) in urban areas, including its surrounding properties and land-use. The high property value contributes to the high cost of rent, while increasing tax payments and assessment rates to local government (Mohammad et al., 2013). This scenario shows that the needs of rail transport industry to expand the regional development and its contribution on socioeconomic, besides, contribute towards the growth of country's economic.

1.2 Past Literatures

The occupational incidents that result from unsafe acts and unsafe conditions were frequently discussed in all past studies (Brown et al., 2000; Christian et al., 2009; Zahiri Harsini et al., 2020). The safe behaviour dimensions have been covered because it is able to record 'real work' scenarios (Aleksynska et al., 2019). This is a crucial part of comprehending the changes in employee behaviour during task performance. Therefore, a strong perceived of safety in the workplace is expected to reduce incidents, including near misses. Thus, the deficiencies of safety culture have been identified become the main problem that this discussion will focus on. The current safety culture doesn't seem to be able to solve the problems. As follows, ineffective safety system and poor safety monitoring (Zahiri Harsini et al., 2020), fail in elevate the workforce safety issues and convey the safety expectations to the workforce was identified as contributor to inhibiting safe behavior and poor safety performance (Findley et al., 2007). Details of this problems are discussing as per below:

Table 1 - Factors related to deficiencies of safety culture

Factor	Element	Example
Regulatory Control	1. Difficult in managing the operations direct by organization that led to different culture practices (Robins & Roberts, 1996). 2. Programs for safety not integrated in the overall safety plan (Nævestad et al., 2018).	Cultural differences could occur in Malaysia companies due to business of operations in railway involving various of stations and multiple networks. Employee and passenger safety becomes a major issue when rail operating companies are actively involved in occupational incidents (Esmaeili et al., 2015; Hudson, 2007).
Supervision	1. Poor relationship between managers and employees in railway industry (Nævestad et al., 2018). 2. Differences in command-and-control management style (Zuschlag et al., 2012). 3. Tended to be reactive rather than proactive (Proctor, 2014).	Have evidence from several studies shows that perception and expectations by workers on how importance of safety are based on the actions of supervisor towards safety issue (Cooper & Phillips, 2004; Huang et al., 2006; Zohar, 2000). A number of topics was discussed with regards to this issues such as leadership (Albrecht et al., 2015; Bergh et al., 2012), motivation aspect (De Koster et al., 2011; Hofmann et al., 2003), rewarded and punishment (Clarke, 2006).
Communication	1. Lacks in applied practices act for bottom-up approach of hierarchical communication pattern (Hudson, 2007; Tear et al., 2020). 2. Failure to engage employees at all levels in the rail organization (Nævestad et al., 2018).	Less frequent interaction on safety related feedback (Menguc et al., 2013), fail to share the values to people at all levels of the hierarchy (Vredenburgh, 2002) are the problems that will hinder the organization and its workers to implement the safety culture.

Attitude Towards Safety	1. Negative employee attitude towards safety such as breaking the rules and procedures in performing daily routine (Farrington-Darby et al., 2005). 2. Poor in complying safety standards are the causes of incidents that need to be addressed critically (Farrington-Darby et al., 2005; Proctor, 2014).	All researches was strongly emphasized on proactive attitude towards safety, which able eliminate the occurrence of potential accidents. Moreover, worker develops a psychological recognition and safety beliefs, which show in their attitude and behaviour (Jeffcott et al., 2006; Naji et al., 2021; Wang & Liu, 2012).

Even though all these contributing factors were discussed and identified repeatedly, it still persists. Such findings indicate the need for a better understanding to solve the problems that arise. There is evidence that the organisational safety culture can be considered to be ultimately shapes the behaviour (Farrington-Darby et al., 2005). Therefore, these all-risks the health and safety of employees because employees' poor safety practices lead to accidents and impact on the high costs for organization. As a nutshell, safety culture is crucial indicators to come up with best safety practices of organization, whereas, led to the good safety performance.

1.3 Safety Culture and Trends in the Field of Safety

1.3.1 Definition of Safety Culture

The concept of safety culture been used when the researchers refers it as part of organizational culture component (Fernández-Muñiz et al., 2007; Glendon & Stanton, 2000; Guldenmund, 2000). In line with this, safety culture is categorized as sub-facet of organizational culture that affect members' attitudes and behavior in regards of organizational health and safety performance (Cooper, 2000). Furthermore, other study emphasize on the safety culture outcomes which have an impact on the level of safety in the organization (Nielsen, 2014). Besides, several discussions have been made to identify the conception of safety culture that mostly involved in aspects of perception, attitudes and behavior of the organization and individuals (Khandan et al., 2013; Rundmo, 1992a).

As summarize, the variety of the term can be seen through interchangeably applied in theoretical of safety culture. This is reflected on the inconsistent on the use of the terms. Therefore, the study show there is no universal agreement and single study exists which adequately covers the definition or content of the term (Fernández-Muñiz et al., 2007), still lacks of culture change intervention studies in the safety literature that demand clarity (DeJoy, 2005; Hale et al., 2010; Nielsen, 2014), the link to re-search on organizational culture has been weak or even nonexistent (Choudhry et al., 2007; Clarke, 2006) and the concept of safety culture is still fuzzy (Nævestad et al., 2018). Debate continues about the best terms for the safety culture; however, the most accepted definition of safety culture is from UK Health and Safety Commission 1993. Overall, the definition from most of the researchers point up on the aspect of safety culture is emphasize on the attitudes, beliefs, behavior, value and shared all of it with group of peoples and organization towards better safety practices in reducing the level of injuries and accidents.

1.3.2 Trends in Safety Culture Literature

The International Atomic Energy Agency used the phrase "safety culture" in literature in its report on Chernobyl Accident Summary Report in 1986 after the incident of Chernobyl. This report places special emphasis on the responsibility of people's behaviors in the organization for safety practices. Thereby, the railway industry has raised awareness and concern for safety culture since the incidents such as Ladbroke Grove, Hatfield and Potters Bar (Farrington-Darby et al., 2005). The debate brought by practitioners and researchers on the issue of management conflict in railway industry. One major issue in early phase was Turner's system view about "man-made disasters". The idea emphasized the failures in high-hazard industries which are due to cultural and organizational causes. As an example, organizational structures, culture, policies, and management procedures are among the causes of organizational accidents. In particular, the rail industry's organisational structure is extremely problematic to manage due to fragmentation following privatisation, which is said to have made working relationships difficult and inefficient (Jeffcott et al., 2006). Therefore, the need for reform in the rail industry's safety standards has been underlined.

There are three categories of safety culture trends discussed in safety literature. Firstly, the primary safety literature was discussed regarding the understanding of accident causation. The development of theory and model was introduced and expanded in this phase such as Heinrich's Domino Theory as early 1910s, Swiss Cheese Model developed by Reason in 1977, and Bandura's Model which all describe on accident causation relationships. The growing literature also more focused on attitudes, behaviors and even employees' perceptions. These studies are considered as an established concept in applied psychology and safety literature (Das et al., 2008). The second trend mentioned across the safety literature was the Safety Management System (SMS) approach. The SMS is a set of procedures and tools used by organisations to reduce the likelihood of injuries and accidents at the workplace. The identification of relevant variables, discussions on the relationship between SMS components, and implementation on sociotechnical aspect are

one of the most widely used in numerous literatures (Brown et al., 2000; Grote & Künzler, 2000). It has been proved significantly in reducing the rate of incident through all this integrated approach.

However, despite it, workplace safety suffers from industrial accidents which the rate of incidents is still alarming. The employees and organization continuing faced the work-related injury and death. The decreasing trend of incidents merely depicts a decrease from year to year but none of these have reached zero incidents. The concern on zero incidents becomes a crucial priority in the current occupational setting. Central to the entire discipline of safety culture is the people which should be given more attention rather than the system and the technology (Hudson, 2007). Debate continues about the best strategies for the management on workplace safety. Thus, recently, researchers have shown a growing interest in the human factors domain which consists of the understanding on behavior at workplace. It became the third trend in safety culture improvement.

To date, research has tended to focus on perception, attitudes and determining selected factors for measuring outcome behavior and level of performance. Furthermore, the findings from a study conducted in railway industry shown that even though employees acknowledged the importance of safety and presented it through their practices, the railway industry's omnidirectional safety culture could not be developed due to influenced from external factors such as personal, environment and organization that led in exposing their workplace into dangerous conditions (Wang & Liu, 2012). This situation demonstrates that the railway industry still needs room for improvement.

2. Dimension of Safety Culture

The early phase in concerning safety culture started from the increasing use of machine tools and factory system led to an Industrial Revolution era in Europe. In this era, there has been a movement regarding equality issues, freedom of speech and rises in health and safety. Since then, the concern on welfare began to take place among workers when their started demand for better working environment. Likewise, the government start to enforce the procedure for safer work practices in the industrial workplace. As a result, the term of organization climate and organization culture has been used gradually in tandem with industrial development. The concept of safety culture been used when the researchers refers it as part of organizational culture component (Glendon & Stanton, 2000).

In line with this, safety culture is categorized as sub-facet of organizational culture that affects members' attitudes and behavior in regards of organizational health and safety performance (Cooper, 2000). The concept of safety culture been developed as a response towards organizational accident which also applying at individual level to investigate the accident (Mearns et al., 2003). The emphasis on safety culture for improving organizational behaviour has become central phenomenon that critical to be assess in this study. Therefore, there have several dimension in safety culture that been used widely by other researchers involving management commitment (Nenonen & Vasara, 2013; Rundmo, 1992b), supervisor support (D. Seo et al., 2004; Vecchio-sadus, 2007), communication (Neal et al., 2000; Siu et al., 2004) safety training (Huang et al., 2007; Nahrgang et al., 2011), safety behaviour (Christian et al., 2009; Zohar, 2010) and others related dimensions. Four dimensions will be discussed in relation to this discussion's findings. These dimensions were derived from Swiss Cheese Model theory (Shappell & Wiegmann, 2000; Wreathall, 2009). The concept has been adapted in explaining how the process of incidents occurred through the role of safety culture, which in turn affects the behavior of employees.

2.1 Regulatory by Management

Controlling on the behavior of management and workers towards safety compliances and safety practices can be implementing through a systematic regulatory approach. There are many hazardous risks that might have potential to occupational related injury or even fatality. The increase of workplace accidents occurs when the safety rules and procedures are not complied by employees. A safety management system (SMS) approach was chosen to allow study on safe conduct job and its contribution to track the incidents and increase a productivity of organization. In regards of productivity, the pressure from management to workers to perform the job more quickly lead in increases of human error (HSE, 1995). Previous study found evidence that pressure in safety climate influences the safe behavior of workers (Brown et al., 2000). Hence, some study draws an attention on human error that occur due to less compliance on policy in organization (Wachter & Yorio, 2014). The use of regulatory approaches (i.e., legal, policies, procedures, instructions) drive a direction to organizations to run an activity or program on safety related. This is supported by prior studies that development of safety policies as critical aspect in SMS that forced the organizations commit to the principles and guidelines of safety and health at work (Iqbal et al., 2019). It's not only a 'paper system' but also needs an action into account (Mearns et al., 2003). Meanwhile, management actions and behaviors need continuous reinforcement through management commitment as activator of regulatory implementation. Therefore, the organization must develop a strong foundation of committed on policies and practices among employees through management commitment (Bunner et al., 2021). Hence, the strengthening of citation (i.e., legal demands) in organization able change the employer's behavior to be refocus on safety and health issues.

2.2 Supervision Respond

The respond from supervisor in any level of operation is key factors that influencing the incidents. The willingness of employees to participate in safety related activities depends on how an employee receives the respond from supervisor (Albrecht et al., 2015; Menguc et al., 2013) and employee experience with their supervison (Boon & Biron, 2016). A number of studies found that supervisor is the most influence dimensions of safety climate compared to others, which affect the employee safety perception (D. Seo et al., 2004; H. J. Seo & Hong, 2022). Besides, evidence shows that individual safety perceptions were positively related to supervisor safety support that enables in reducing occupational injury rates (Mccaughey et al., 2015). Therefore, the perception of employees is important predictors for accidents and unsafe behavior (Das et al., 2008). The differences of perception between supervisor and employee regarding hazards affect their behavior because supervisors are not exposed to the risk as same level as employee (Fleming et al., 1998). Frequent interaction through supervision is able to reduce this gap (Vecchio-sadus, 2007). Some studies suggested leadership practices need to be emphasized due to it becoming the most influences factors to the rates of accident. Surprisingly, further evidence found the leadership is a more important predictor of safety rather than hazard reducing systems (HRS) even though its contradiction as demonstrates the HRS become a strong predictor in previous research (De Koster et al., 2011). Moreover, reported on feedback helps organization to prevent the hazard and injuries by track the hazard through caution and indication sign of safety, regular meetings (i.e., safety as part of staff meetings and production meetings), form of publications (i.e., bulletin boards) and safety visions and objectives (Gunningham, 2013). Evidence found supervisory feedback is positively associated with engagement which engagement fully mediates the relationships between feedback and performance (Naghavi K. et al., 2019). Hence, the role of supervisor is to correct the known problem by detecting and monitoring situations and behaviors that do not comply with safety rules through proposed the safety observation.

2.3 Safety Communication

The past researchers have noted that communication is one of the key factors that influencing the safety climate as an antecedent of system safety (Hofmann & Stetzer, 1998; Neal et al., 2000). Evidence found the communication and organization support are crucial elements, which become three strongest contributors to employee perceptions of safety climate (DeJoy et al., 2004). Without a proper communication channel, conflict in organization will occur due to less of communication (Camelo-Ordaz et al., 2014). Thus, the organization could face a difficulty if unable to develop a strong and shared culture if the workers have a little opportunity to interact or have a little contact within different divisions of a company (Mearns et al., 1998). An individual's safety performance will remain unclear when the information did not reach to all of employees (Nenonen & Vasara, 2013). Based on that, the hierarchy of communication should reach all levels in the organization based on degree of openness (Glendon & Stanton, 2000), openly, comfortable and free to discuss on related safety issue (Hofmann & Stetzer, 1998). Previous research was support into communication hierarchy that not only concern from bottom-up approach but also need attention from top-down communication through OSH management systems and a pre-requisite for achieving compliance with the standard in the certification process (Gao et al., 2019)(Podgorski, 2005). Similar studies had informed earlier which stated adequately informed of the important issues able strengthen the safety communication channel (Vandenberg et al., 1999). There have evidence revealed that the employee in lower hierarchy will view safety culture less positive compare than those have higher position in a hierarchy such managers (Tear et al., 2020). As details, if the management highly commitment towards safety, then, the lower hierarchy employee will less have negative perception towards management. This benefits on open communication on safety matters such as voice out their safety concern towards superior level.

2.4 Unsafe Act

The unsafe act by employee is utmost active failure that affect highest of the accidents and been extremely investigate throughout other factors. With respect to that, the role of unsafe human behaviors was considered as the major contributing factor in workplace accidents (Hussain et al., 2017). Some of the unsafe acts are due to human error that employee tend to bend the rules, even, felt better to get the job done by non-compliances (Çakıt et al., 2020)(Mearns et al., 1998). Furthermore, unsafe acts happen not only due to personal characteristics of the employee but also consequences from internal factors. Evidence found that organizational internal factors within operating environment have influence on employee safety behaviors (Brown et al., 2000). As an example, employment security is a key priority for employees that can influence their safety behavior. In parallel, studies have found that have significant difference between operator and contract staff, which operator staff have greater job security rather than contract staff. The reason is due to contract staff working in short term of contract compare than operator staff (Mearns et al., 1998). In protecting employees' employment security, the safety record be highly protected by them to avoid threaten on their job (Kongsvik et al., 2012) such as threat of layoffs (Siu et al., 2004) and blaming culture (Van Der Schaaf & Kanse, 2004).

3. Empowering Safety Behavior

The abundance of literature shows that safety performance has been used in variety of ways as measurement component in safety management system (Raviv et al., 2017; Saedi et al., 2020). Based on the current trend of research it's explained that there are two grouping indicators in measuring safety performance (Lingard et al., 2017). Firstly, the lagging indicator which becomes part of reactive management. It's been measuring the safety performance after the safety program. As an example, the number of accidents/incidents, days away from work, etc. The use of this measurement indicator such as reliance on incident rates for safety performance could have serious consequences. Secondly, the leading indicator that become a proactive management. This indicator was measured before the event happened. It provides an opportunity to detect and resolve the safety issue before the incidents occur. It also requires several preventive actions, safety initiative and activities reported such as near-misses, audits, employee engagement in safety, safety meetings, equipment, or machinery maintenance, etc.

The past studies used several approaches to measure safety performance such as the number of safe and unsafe behaviors that performed by employee which derived from accident or incident reports (Cooper & Phillips, 2004), task performance (i.e., safety compliance) and contextual performance (i.e., safety participation) (Neal et al., 2000), besides a reward system to maintain the engagement of workers towards safety compliance (Vredenburgh, 2002) and to increase motivation of workers (Cooke, 2003). Meanwhile, most studies using the indicators through number of fatalities, fatal accident/incident rate (Daramola, 2014; Raviv et al., 2017), total recordable injury rate, lost time injury frequency (Mearns et al., 2003), number of lost workday cases and number of lost workdays, number of restricted duty cases and restricted duty days and number of medical treatment cases. However, this method appears to be gaining popularity among industry players due to the fact that it can only be measured after an incident has occurred, which can lead to catastrophic events. The ineffectiveness of achieving zero incidents shifts the focus of industry players and researchers toward human factor management, as specific, behavior approach rather than focuses on data management.

Therefore, current research identifies leading indicators as the main measurement of an organization's performance. Behavior-based observations such as safe behavior or unsafe behavior are included as leading indicator measurement (Sinelnikov et al., 2015). The reason behind was leading indicator such safety behavior has potential in influences the performance of the organizations, including employee personal safety. Meanwhile, studies have found evidence that the behavior does influence performance (Dahl & Kongsvik, 2018; D. C. Seo, 2005). It can be done through managing at-risk behavior as a platform to measure performance of safety in organization (Gnoni et al., 2013). Besides, it has ability to manage occupational risk and prevent workplace injuries, in turn, support the zero incidents of safety culture (Hudson, 2007). The adapted behavior-based safety (BBS) program in most industrial-settings enables the organization and workers to take control of occupational risks management as an important strategy in Safety Management System. Thus, a strong safety climate perception is expected to decrease incidents at workplace, including near misses (Isha et al., 2019).

4. Conclusion

This review of literature has highlighted the importance of safety culture in influencing employee behavior. The information on past evidence gained in this study discloses that a variety of factors influence employees' actions, notably their behavior. In Malaysia context, the study on behavior of rail transport industry among employee appear to be reasonable. Since a number of occupational incidents have occurred such as derailment, collision and other events, it would require additional attention in handling risk management. These to avoid any further implication such as unsafe behavior, near misses that result in harm, or even death. The review makes a number of recommendations for future research.

Researchers suggest that instead of focusing on accident statistics, researchers should prioritize safety behavior by emphasize on selection of behavior observation data in measuring performance, specifically in Malaysia working environment. Thus, United Nations (UN), the International Labor Organization (ILO), and local governments have all emphasized the importance of investigating safe behavior. Furthermore, inclusion of varieties operation management in train network, it might deliver different culture during operation. This study perhaps is possible to obtain more precise explanations and improve understanding of safety-related issues. Therefore, this study contributes to the general body of knowledge in the occupational, safety, and health fields by providing information about understudied factors and causal effect of behavior among rail employees in transportation settings.

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