

## Improving Safety Performance by Influence Safety Management Practices and Safety Culture: A Conceptual Framework

Najihah Abdul Rahim<sup>1</sup>, Norhusniyati Husin<sup>2</sup>, Joeaiza  
Juhari<sup>3</sup>, Siti Rohana Daud<sup>4</sup>, Khaizie Sazimah Ahmad<sup>5</sup>, Nik  
Rozila Nik Mohd Masdek<sup>6</sup>

<sup>1,3,4,5</sup> Faculty of Business and Management, Universiti Teknologi MARA (UiTM) Melaka,  
78000 Alor Gajah, Malaysia

<sup>2,6</sup> Faculty of Business and Management, Universiti Teknologi MARA (UiTM) Selangor, 42300  
Bandar Puncak Alam, Malaysia

Corresponding Author: Najihah Abdul Rahim

Email: najih410@uitm.edu.my

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### Abstract

Numerous organizations are actively implementing occupational health and safety management systems (OHSMS) to ensure the creation of a safe and healthy workplace by removing or lowering the hazards using a proactive approach. Workplace safety is crucial, especially in developing countries, for businesses to continue functioning, thrive, and function at their best (James & Zoller, 2017; Kabir et al., 2018). One of the sectors in Malaysia with the highest accident rates is manufacturing. As in previous years, manufacturing had the greatest rate of occupational accidents in 2020 (4.12 events per 1,000 employees). Work-related accidents involving factory workers have been linked to a few factors, including the usage of heavy machinery, unsafe working conditions, and handling of hazardous products. The lack of safety education and the weak managerial commitment to employee safety contributed to the rising number in this statistic. Therefore, the aim of this study is to develop a conceptual framework explaining the relationship between safety management practices, safety culture and safety performance.

**Keywords:** Safety Performance, Safety Management Practices, Safety Culture, Occupational Health and Safety Management Systems (OHSMS)

### INTRODUCTION

Occupational safety and health (OSH) are of utmost importance to both employers and employees, as it promotes not only the productivity of the workforce but also the general

sustainability and competitiveness of industries. The International Labor Organization's estimation indicates that approximately 2.78 million fatalities occur in the workplace due to inadequate safety systems, human factors, managerial practices, and organizational structures (ILO, 2017). Consequently, an alarming average of 7,500 individuals lose their lives each day. Within this figure, 1,000 individuals succumb to workplace-related injuries, while the remaining 6,500 fall victim to occupational diseases (Hämäläinen et al, 2017). In Malaysia, the industrial sector recorded an alarming 10,303 incidents of occupational accidents in the year 2020, signaling the urgent need for a thorough investigation of workplace safety procedures and their related repercussions. The high rate of workplace accidents in Malaysia's manufacturing industry emphasizes how urgent it is to solve this important issue. The detrimental effects resulting from such incidents have been highlighted by numerous studies, as demonstrated by Kim et al. research in 2016. These investigations have shown several important findings, one of which is the absence of a preventive safety culture within organizations, which has been recognized as a key factor in the increased accident rates. A strong institutional pressure, as well as a mindset shift and true dedication from every employee to OHS-related problems, can improve an organization's safety culture. Many organizations are attempting to improve their workers' occupational health and safety (OHS). As a result, having an OHS Management System and putting it into practice represents a tremendous opportunity for organizations that want to respect occupational safety legislation and develop a long-lasting safety culture. This conceptual study begins a thorough investigation of the complex relationship between workplace accidents, safety culture, and organizational practices in Malaysia's manufacturing industry. It contends that the implementation of a strong Occupational Health and Safety (OHS) Management System, in conjunction with a cultural shift towards prioritizing safety and an unwavering commitment from all employees to OHS-related concerns, can serve as a transformative catalyst for reducing workplace accidents.

## **LITERATURE REVIEW**

### **Management Commitment to OHS**

Management commitment is a term that is regularly used to indicate management involvement and participation in organizational safety programs. To have a high level of committed safety management commitment, all members of the management team must think about safety in the same way and include it in their organization's strategic decision-making processes. The management commitment to safety must be expressed in a visible action by the management and must be demonstrated in their behavior as well as their words (Alam et al., 2020, Abdullah & Abdul Aziz, 2020). Organizational commitment to occupational safety reflects the extent to which top management prioritizes occupational safety in decision-making and allocates resources to support it. Managerial commitment involves behaviors that assist fellow employees in achieving established goals (Hansez et al., 2010). Occupational Health and Safety (OHS) Management System is a systematic process that ensures the effectiveness of risk controls in workplaces, defining potential hazards. This approach elucidates how policies and procedures are implemented in workplaces, involving goal setting, plan development, and ongoing monitoring of health and safety performance (Vandyck et al., 2015). Numerous studies in the literature have explored the impact of management commitment on employee satisfaction and safety performance, as evidenced by research conducted by Fernandez-Muñiz et al. (2011), Vinodkumar & Bhasi (2009), Mc Gonagle et al. (2016), and Seixas et al. (2016). Vinodkumar & Bhasi (2009) identified

managerial commitment and safety measures as safety climate elements. Their findings demonstrated that management commitment significantly influenced safety practices and safety performance, as well as employee satisfaction and competitiveness. Fernandez-Muiz et al. (2011), on the other hand, discovered that management commitment had a negative impact on work pressure but a favorable impact on encouragement and communication. Hence, this study aims to ascertain whether management commitment significantly influences safety management within the manufacturing industry in Malaysia.

#### Safety Training

According to (Vinodkumar & Bhasi, 2010), effective safety training is critical to the success of OSH programs because it improves behavioral skills, related knowledge, and/or attitudes, and serves as a catalyst for predicting accidents, particularly among new employees. Organizations should develop a systematic, thorough, and comprehensive safety training program for all staff (Guo et al., 2016; Flin, 2017; Lin et al., 2017). A well-planned safety training program can encourage positive safety behavior among personnel. Workers can recognize problems and minimize them before they become a disaster thanks to safety training. Researchers have emphasized the importance of safety training in explaining safety performance results since it is a reliable method of forecasting accidents and, as a result, altering workers' safety behaviors (Randles et al., 2010). Moreover, safety training has been acknowledged as a critical safety management practice capable of impacting high safety performance outcomes across industries (Manu et al., 2017; Marin et al., 2017; Rose & Rae, 2017).

### Workers' Involvement in Safety

Work involvement pertains to encouraging and enabling employees to actively participate and provide input on health and safety concerns within their workplaces. Establishing this objective is vital, as involving employees can positively impact health and safety performance (Ocloo et al., 2017). Furthermore, work involvement fosters collaboration between management, health, and safety representatives, in activities such as inspections, investigations, and risk assessments. Worker involvement is characterized in the safety literature as a behavior-based method that involves individuals or groups in an organization's upward communication flow and decision-making process (Vredenburg, 2002). Ford & Tetrick, 2011 discovered that involving workers in the safety management process was critical to an organization's safety performance because such involvement psychologically empowered workers through their participation in safety committees. Furthermore, Hayes et al., 1998 and Lee & Dalal (2016) investigate the security climate and culture. It is critical for forecasting the safety performance of employees in the organization.

### Safety Communication and feedback

Previous research has been conducted to support the connections between safety communication and multiple indicators of safety performance. Parker et al., 2001 found that to ensure employee work safety practices, effective quality communication in distributing pertinent safety information is required. Additionally, effective safety communication and feedback are recognized as effective tools for improving safety performance within organizations (Kines et al., 2010). Safety communication and feedback have been recognized as essential factors capable of increasing organizational safety performance outcomes (Jin et al., 2015). For maximum efficacy, safety communication and feedback should be a bidirectional process, fostering open dialogue and active engagement instead of solely relying on a top-down approach (Vinodkumar, 2010). Encouraging employees to provide feedback on safety-related concerns to management and suggesting ways to enhance work processes and make them safer is imperative. Safety feedback, whether initiated by the employer or employees, functions as a reinforcement mechanism for encouraging desired behavioral changes (Prue & Fairbank, 1981). From a managerial standpoint, Vredenburg (2002) underlined the significance of feedback as a vital element within the communication process. She emphasized that a robust communication and feedback system can help prevent hazardous conditions that might lead to accidents, as worker behavior often hinges on updated information. Furthermore, when it comes to enhancing safety performance, particularly in terms of safety-related behaviors, Goetsch (2011) stressed the need for safety managers to swiftly share safety-related information with all employees.

### Safety rules & procedures

Safety rules and procedures encompass the extent to which an organization formulates a well-defined mission, delineates responsibilities and objectives, establishes behavioral standards for employees, and implements a safety system to address and rectify workers' safety-related conduct (Lu & Yang, 2011). Employers are legally obligated to fulfill their duty of care (Hopkins, 2002), yet the OSH Act of 1994 does not explicitly delineate how employers should execute this duty. Nevertheless, the enforcement of safety rules and procedures is a tangible manifestation of management's commitment to workplace safety (Lu & Yang, 2011) (Fernández-Muñiz et al., 2007).

Empirical studies have consistently demonstrated that safety rules and procedures wield a substantial influence over workers' safety-related behaviors (Legg et al., 2015) (Lu & Yang, 2011). To effectively foster employees' comprehension and adherence to these protocols, it is imperative for management to communicate these guidelines in a clear and accessible manner. In a related study, Subramaniam et al. (2016) observed that the effective implementation of safety rules and procedures within an organization, achieved through regular safety inspections and enforcement of safe working practices, effectively compels employees to prioritize safety in their work. This is further underscored by Lu & Yang's (2011) exploration of safety rules and procedures, emphasizing the organization's role in defining a clear mission, responsibilities, objectives, and behavioral norms, as well as the importance of implementing safety systems to rectify employees' safety-related conduct.

Whereas peer support and guidance are undoubtedly valuable, the research suggests that well-structured safety procedures and rules, when adequately enforced, can significantly motivate employees to adhere to safety standards while performing their job responsibilities.

#### Safety promotion policies

The importance of a rewards system as a key safety management practice in predicting accident and injury rates has been widely acknowledged. This practice is instrumental in outlining the path to achieve safety goals and is intended to be highly visible throughout the organization, thereby encouraging safety performance outcomes and desired behaviors from all members. Safety promotion policies are defined as a process aimed at ensuring the establishment and maintenance of conditions necessary to attain and sustain an optimal level of safety (Welander et al., 2004). The implementation of safety promotion policies not only signifies management's commitment to safety but also demonstrates a proactive approach to safety. According to several studies, employee safety reporting plays a crucial role in preventing workplace accidents (Chen & Lai, 2014) (Barach & Small, 2000). Vinodkumar & Bhasi (2010) emphasize that safety promotion policies encourage employees to report hazards, raise awareness through the organization of programs to commemorate safety week and other related events, and can be implemented by promoting safe behaviors through rewards and incentives.

#### Safety Culture

According to (Yorio et al., 2019), the concept of safety culture developed in the aftermath of the 1986 Chernobyl tragedy. Safety culture has always been a typical scene for determining the underlying and primary causes of incidents. Researchers believed that safety culture (SC) improves employee safety performance by lowering psychosocial dangers. A higher level of safety in cultural environment decreases psychological hazards by enhancing employee performance in terms of safety concerns (Naji et al., 2021). Safety culture has gained traction in a variety of industries as a means of minimizing workplace accidents (Fernández-Muiz et al., 2007). Safety climate, also known as safety culture, is described as workers' shared ideas of the importance of occupational safety in the organization (Sawhney et al., 2011). In many industries such as manufacturing (Probst & Estrada, 2010), construction (Zakaria et al., 2010), and so on, safety climate is becoming increasingly significant as an indicator of employee safety and health (Clarke, 2006). More recent studies have effectively connected safety culture to safety practices (Guldenmund, 2010).

### Safety Performance

Safety performance is defined as the measuring of activities undertaken to protect employees from workplace accidents and occupational diseases (Office of ASCC, 2005). Based on the nature and setting of their investigations, several researchers have defined safety performance. In general, safety performance is a measurement used to determine workplace safety levels that include accidents, fatalities, and injuries (Curcuruto et al., 2015; Mullen et al., 2017). Safety performance also refers to the likelihood of accidents occurring that result in fatalities, injuries, or property damage (Erdogan et al., 2018). One of the key markers of organizational safety outcomes is the frequency with which accidents occur (Huang et al., 2017). Griffin & Neal (2000) distinguished two types of safety behaviors: safety participation and safety compliance. The purpose of safety participation is to create a safe environment. Whereas the goal of safety compliance is to guarantee that personnel follow the organization's safety policies and regulations (Griffin & Hu, 2013). The definitions of safety performance provided above underscore the significance of safety performance within organizational research. Organizations consistently strive to enhance safety performance by reducing accident rates, injuries, fatalities, and promoting safer behaviors among their workforces. In essence, the evaluation of an organization's performance hinges on its safety performance. This not only mitigates the occurrence of accidents, injuries, and fatalities but also curtails the associated financial costs. Consequently, organizations allocate substantial resources to give safety the attention it warrants (Curcuruto et al., 2015; Osman et al., 2015). In this present study, safety performance is examined as a set of behaviors that enhance workplace safety. These behaviors, which have been previously identified as components of safety performance, encompass safety compliance and safety participation.

### UNDERPINNING THEORY

Accidents are characterised as unforeseen events that cause injuries, fatalities, lost production, or property and asset damage. Accident prevention is particularly difficult when the causes of accidents are unknown. There have been numerous attempts to create a prediction theory of accident causation, but none have been accepted. The following are theories related to accidents and safety performance that can be linked in this study.

#### The Domino Theory

In accordance with W.H. Heinrich (1931), who formulated the domino theory, it is proposed that 88% of all accidents result from unsafe actions by individuals, 10% from unsafe conditions, and 2% from unpredictable or uncontrollable incidents commonly referred to as 'acts of God.' Heinrich introduced a 'five-factor accident sequence,' in which each factor triggers the next step, much like the sequential toppling of dominoes in a row. The progression of accident factors is detailed as follows:

1. ancestry and social environment
2. worker fault
3. unsafe act together with mechanical and physical hazard
4. accident
5. damage or injury.

H.W. Heinrich created the Domino theory of accident causation in the late 1920s. His study provides the foundation for several modern theories of accident causation. Accidents could be avoided using the domino model by deleting one of the components and thereby interrupting the knockout effect. Heinrich suggested that the central factor in the accident

sequence was unsafe act and mechanical hazard, and that removing this key aspect rendered the preceding factors ineffectual. Heinrich felt that unsafe acts generated more accidents than unsafe conditions. As a result, his accident prevention philosophy focuses on unsafe acts activities and people-related factors that cause injuries (Sabet et al., 2013). Heinrich's domino theory has evolved through time, with a stronger emphasis on managerial practices. Bird and Loftus (1976) revised the domino sequence to highlight the management relationship associated with all incidents' causes and effects. Bird and Loftus' idea use five dominoes to symbolise the following occurrences in all incidents (lack of control, basic cause, immediate cause, incident, and people-property-loss).

### Set Theory

According to social exchange theory (SET), employees see their dedication to their jobs as a way of repaying how they are treated. Working involves tremendous cognitive, physical, and emotional resources, depending on how much energy an individual puts in. One of the most significant concepts in the recognition of workplace conduct is the social exchange theory (SET) (Cropanzano & Mitchell, 2005). SET is predicated on the assumption that people will act in accordance with the incentives and punishments that they are most likely to get (Cook & Rice, 2006). In that case, reinforced habits could lead to repetitions and vice versa. Emerson (1976) asserted that an action would only continue to flow if it was dependant on a valuable return. One common use of the SET is an improvement in safety performance (indicative of safety practises). In the context of the present study, the anticipation is that when workers believe that managerial efforts will result in the implementation of effective safety management practices concerning their own safety, these workers will form favourable opinions about the user-friendliness of their work environment.

### THE PROPOSED CONCEPTUAL FRAMEWORK

This study created a conceptual framework based on two underpinning theories: Heinrich's Domino Theory and Social Exchange Theory (SET). The dependent variable (DV) refers to safety performance, mediating variable (MV) refer to safety culture, whereas the independent variable (IV) refers to safety management practises, which includes the management commitment, safety training, worker's involvement in safety, safety communication, safety regulations and procedures, and safety promotion policies. This conceptual framework assumes that safety management practices have an impact on workplace safety performance. Based on prior research, a mediation role of the safety culture is expected between safety management practices and safety performance. As a result, this conceptual framework of safety performance plays a significant role in identifying the antecedents of the safety culture to assist in the manufacturing setting to improve safety performance, which, in turn, will sustain safety standards at the workplace.

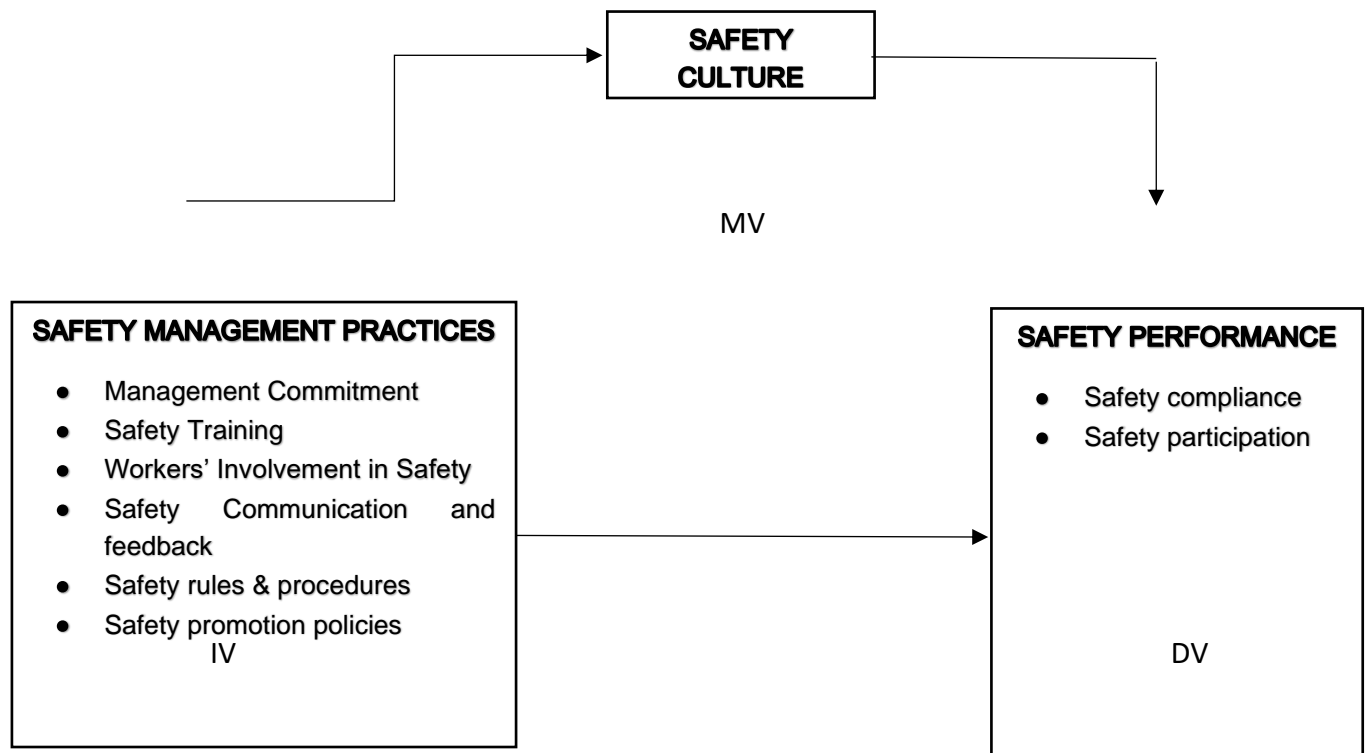


Figure 1.0: The conceptualization of the relationships between safety management practices, safety behavior and safety performance

## CONCLUSION AND RECOMMENDATIONS

This conceptual paper has taken on the issue of developing a framework to investigate worker safety performance in Malaysia's manufacturing industry. This study improves on past research in the subject by explaining the factors that influence the safety management practices and, as a result, safety performance. It is commonly understood that safety management practises such as safety training and management commitment to safety are critical in moulding safety performance. This paper has not only contributed to the existing body of knowledge by using the domino theory and social exchange theory as a supporting framework, but it has also thrown light on the critical importance of management commitment, safety training, worker's involvement in safety, safety communication, safety rules and procedures, and safety promotion policies as fundamental components of safety management practises. Furthermore, this study suggests that the safety culture may play a mediation role in the relationship between these antecedents and safety performance. It is suggested that future research focus on finding additional safety culture antecedents to provide a more comprehensive knowledge of their impact on safety performance. Implications for future research are that the study offers a new perspective at health and safety management in the context of manufacturing industry and enhance safety performance among workers in Malaysia's manufacturing industry.

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