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THE IMPACT OF SAFETY CULTURE AND SAFETY LEADERSHIP TOWARDS SAFETY PERFORMANCE IN MALAYSIAN MANUFACTURING SMES: THE MODERATING ROLE OF CO-WORKERS

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Abstract:

This conceptual paper explores the relationships between safety culture and safety leadership that contributed to safety performance in Malaysian manufacturing SMEs, emphasizing the moderating role of co-worker support. Drawing on Social Exchange Theory (SET) and Leader-Member Exchange (LMX) Theory, this study integrates existing literature to propose a conceptual framework. Safety culture, encompassing management commitment, safety communication, safety training, and safety rules and procedures, alongside safety leadership dimensions (safety caring, safety coaching, and safety controlling), significantly influences safety performance measured through compliance and participation. However, the moderating effect of co-worker support remains underexplored. This paper addresses this gap by developing a conceptual model that provides a foundation for future empirical studies. The implications for academia and industry are discussed, offering insights for enhancing workplace safety in SMEs.

Keywords:

Safety Culture, Safety Leadership, Safety Performance, Co-Worker Support

Introduction

Small and Medium Enterprises (SMEs) play a pivotal role in Malaysia's economic development, contributing substantially to GDP and employment. However, according to the SOCSO (2023), Malaysian SMEs, particularly in the manufacturing sector, face persistent challenges in occupational safety and health (OSH). According to Hong (2011), cited in the latest study by Marzuki (2023), despite numerous initiatives and regulatory frameworks, the industry continues to report high accident rates, with SMEs accounting for up to 80% of workplace incidents. This calls for an in-depth understanding of the antecedents of safety performance, namely safety culture and safety leadership, and how these elements interact with the workplace environment, especially the moderating role of co-worker support.

This conceptual paper aims to develop a framework that links safety culture and safety leadership with safety performance, emphasizing the role of co-worker support as a moderator. Drawing upon Social Exchange Theory (SET) and Leader-Member Exchange (LMX) Theory, the paper outlines a model tailored to the specific context of Malaysian manufacturing SMEs.

Background of Study

Occupational safety and health (OSH) have become pressing concerns globally, particularly in developing economies such as Malaysia, where the industrial sector continues to expand rapidly. Small and medium enterprises (SMEs) in the manufacturing sector form the backbone of Malaysia's economy, accounting for a large portion of employment and productivity. However, as argued by Abdullah et al. (2022), these organizations often face critical challenges in implementing effective safety management systems due to resource constraints, lack of expertise, and weak enforcement of regulations.

Data from the Social Security Organization (SOCSO) reveal that the manufacturing sector consistently records the highest number of workplace accidents in Malaysia, with SMEs contributing to a significant proportion of these incidents. As reported by Vinodkumar & Bhasi (2010), these safety issues are exacerbated by insufficient safety training, ineffective communication of safety procedures, and limited commitment from top management. Consequently, improving safety performance within SMEs has become a national priority.

Table 1: Number Of Reported Occupational Accidents in Malaysia by Sector for The Years 2019 To 2023, Based on SOCSO Data

Year	Manufacturing	Construction	Trading	Others	Total Accidents
2019	17,577	9,968	9,171	3,080	39,796
2020	16,422	Covid 19	8,083	13,245	37,750
2021	13,672	8,923	6,813	3,688	33,096
2022	14,532	11,402	7,651	8,080	41,695
2023	16,064	12,203	8,587	10,891	47,745

Source: SOCSO Annual Reports, 2019–2023

The data confirm that manufacturing remains the most hazardous sector, with increasing trends in accident rates despite ongoing OSH initiatives. This situation reflects the need for deeper interventions beyond regulatory compliance, emphasizing the role of organizational culture and leadership.

The literature by many researchers such as Cooper (2000) and Asad et al. (2022), emphasizes the importance of safety culture as a foundation for workplace safety, where elements such as management commitment, safety communication, training, and clear procedures influence employee behavior. In parallel, Wu et al. (2008, as cited in Subramaniam et al., 2023) recognized safety leadership, which involves caring for employees, coaching them on safety practices, and ensuring compliance through control mechanisms, as a critical factor in shaping safety outcomes.

However, most prior research has examined these factors in isolation, without fully addressing how they interact to influence safety performance, particularly in the SME context. Moreover, according to Lun & Lun (2019), peer influence, represented by co-worker support, remains underexplored despite its potential to reinforce or buffer organizational safety initiatives.

Given the persistent challenges faced by SMEs and the theoretical gaps in the literature, there is a need to develop a conceptual framework that integrates safety culture and safety leadership, while examining the moderating effect of co-worker support. This framework can guide future empirical investigations and inform practical strategies for enhancing workplace safety in Malaysia's SME manufacturing sector.

Problem Statement

Despite their significant economic contribution, SMEs in Malaysia's manufacturing sector continue to record disproportionately high rates of workplace accidents. SMEs consistently show that contribute to nearly 80% of all reported industrial accidents, with manufacturing leading as the most hazardous sector (Abdullah et al., 2022). Guo et al. (2019) highlighted that the persistent issue reflects systemic weaknesses in occupational safety and health (OSH) practices within SMEs, such as limited compliance with safety procedures, underinvestment in safety resources, and weak leadership commitment.

While existing studies acknowledge the importance of safety culture and safety leadership in improving safety outcomes (Vinodkumar & Bhasi, 2010; Wu et al., 2008), most research has examined these constructs in isolation. The interactive effects of both constructs on safety performance, particularly in SMEs contexts, remain underexplored. Lun and Lun (2019) emphasized that, more critically, the role of co-worker support as a potential moderator, capable of strengthening or buffering these relationships, has received limited empirical and theoretical attention. Without a clear conceptual framework integrating these variables, the current understanding of how safety practices function collectively in resource-constrained environments like SMEs is inadequate. Therefore, there is a pressing need to develop a theory-driven conceptual model that explains how safety culture and leadership jointly influence safety performance, and how co-worker support may condition these effects. Subramaniam et al. (2023) proposed that such a model would help address this theoretical gap, guide future empirical research, and offer practical implications for improving safety performance in Malaysian SMEs.

Literature Review

Safety Performance

Safety performance is a key indicator of an organization's effectiveness in managing occupational risks. It refers to employee behaviors that contribute to the prevention of workplace accidents and the promotion of a safe working environment. Griffin and Neal

(2000), along with Zhu et al. (2020), conceptualized safety performance through two key behavioral dimensions: safety compliance, which involves adherence to mandated safety rules and procedures, and safety participation, which refers to voluntary efforts that go beyond formal requirements, such as attending safety meetings or assisting others in practicing safe behaviors. These dimensions provide a holistic view of individual safety conduct and have been validated across various organizational settings.

As reported by Guo et al. (2019) and Sahid et al. (2022) found that improved safety performance is strongly associated with both individual and organizational outcomes, including reduced incident rates, enhanced employee well-being, and increased productivity. In Malaysian SMEs, where structured safety systems may be limited, individual safety performance becomes a vital determinant of organizational safety outcomes. Understanding the antecedents of safety performance is thus critical in formulating strategies to enhance safety behaviors in such contexts.

Safety performance encompasses actions taken to maintain a safe workplace. It is typically measured through safety compliance and safety participation. Safety compliance refers to mandatory behaviors that employees must carry out to ensure workplace safety, such as using personal protective equipment (PPE), following standard operating procedures, and adhering to regulatory requirements. Griffin and Neal (2000) noted that high safety compliance reflects employees' understanding of and adherence to the safety expectations established by the organization.

Safety participation involves discretionary behaviors that go beyond formal job responsibilities, including attending safety meetings, engaging in safety committees, and promoting a safety culture among peers. Neal and Griffin (2006) highlighted that it reflects an employee's proactive involvement in maintaining a safe workplace, thereby contributing to organizational learning and resilience.

Safety Culture

Safety culture reflects the shared values, beliefs, and assumptions within an organization that influence attitudes and behaviors related to safety. As noted by Kalteh et al. (2021) and Noor Arzahan et al. (2022), it is a foundational element in shaping how safety is perceived, prioritized, and enacted across the workforce. A strong safety culture creates an environment where safety becomes an integral part of decision-making at all levels. As emphasized by Cooper (2000) and Vinodkumar and Bhasi (2010), safety culture is a collective expression of an organization's values, beliefs, and behaviors related to safety, playing a critical role in shaping safety outcomes by influencing employee attitudes and actions. As identified by Vinodkumar and Bhasi (2010) and Zakaria et al. (2020), the current study adopts four widely recognized dimensions of safety culture: management commitment, safety communication, safety training, and safety rules and procedures. Management commitment refers to leadership support and resource allocation for safety initiatives. Safety communication ensures that relevant information flows effectively within the organization. Safety training provides the knowledge and skills necessary for safe performance, while safety rules and procedures offer structured guidelines to guide behaviors.

As demonstrated by Restuputri et al. (2021) and Tappura et al. (2022), these dimensions have been consistently linked to both safety compliance and participation, thereby improving safety performance. In SMEs, reinforcing these cultural elements can counterbalance resource limitations and foster sustained safety improvements.

Management commitment is a fundamental dimension of safety culture that reflects the degree to which leaders prioritize and demonstrate concern for safety in their daily operations. It involves the visible involvement of top management in safety initiatives, allocation of resources, enforcement of safety policies, and continuous engagement with employees on safety matters. As observed by Magalhães et al. (2022), when employees perceive that their leaders are genuinely committed to safety, they are more likely to adopt safe work behaviors, thereby improving overall safety performance.

Safety rules and procedures constitute another crucial dimension of safety culture. These are the formalized guidelines, policies, and protocols developed to ensure a consistent approach to workplace safety. Adherence to these procedures minimizes risk and provides a structured response to potential hazards. As noted by E-Yazdan et al. (2022), clearly defined safety rules and procedures in manufacturing SMEs help standardize safety practices across all levels of the organization, enhancing both compliance and participation. These practices are integral components of a strong safety culture, which in turn plays a pivotal role in driving consistent and improved safety performance.

Safety communication refers to the process through which safety information is disseminated and discussed among all members of an organization. Effective safety communication encourages a two-way exchange that allows for feedback, clarification, and continuous improvement. As emphasized by Isa et al. (2021), open and trust-based communication is a fundamental element of safety communication. When such channels are present, employees are more likely to report hazards, near misses, and unsafe practices. This flow of safety-related information not only reinforces a strong safety culture but also supports proactive safety behavior, ultimately contributing to improved safety performance.

Safety training is designed to equip employees with the knowledge and skills needed to perform their tasks safely. Training programs include instruction on the proper use of equipment, hazard identification, emergency response procedures, and the importance of following safety protocols. As highlighted by Pilbeam and Karanikas (2023), safety training plays a vital role in shaping a positive safety culture by enhancing employees' competence and confidence in handling work-related risks. Regular and comprehensive training not only reduces the likelihood of accidents but also encourages proactive safety behaviors, thereby contributing significantly to improved safety performance.

Safety Leadership

Safety leadership refers to the behaviors and strategies leaders adopt to promote and reinforce safety values, norms, and practices within the organization. It plays a pivotal role in shaping safety culture and driving safety performance by influencing how employees perceive and act upon safety expectations. Building on the work of Wu et al. (2008) and Chua and Abdul Wahab (2017), this study adopts three key dimensions of safety leadership: safety caring, safety coaching, and safety controlling, which together represent the behavioral aspects through which leaders influence safety outcomes. In Malaysian manufacturing SMEs, effective safety leadership is particularly important due to the informal nature of many safety systems. Leaders

who actively model safe behaviors, provide support, and enforce safety standards can drive compliance and foster a proactive safety culture.

Safety leadership refers to leaders' behaviors that directly influence safety practices. Wu et al. (2008) identified three core dimensions: safety caring, safety coaching, and safety controlling. Safety caring describes the extent to which leaders show genuine concern for their employees' health and safety. Leaders who consistently express empathy, offer support during incidents, and recognize employees' safe practices cultivate trust and loyalty. Chua and Abdul Wahab (2017) emphasized that when leaders demonstrate genuine emotional investment, it fosters a culture in which employees prioritize safety out of mutual respect and collective responsibility, rather than obligation alone.

Safety coaching involves leaders mentoring and guiding employees in understanding and executing safety protocols. It encompasses one-on-one support, team-based learning sessions, and practical demonstrations of safe work practices. Subramaniam et al. (2023) highlighted that safety coaching is essential in workplaces where tasks are complex and ever-changing. Through ongoing guidance and feedback, coaching reinforces learning and fosters the internalization of safety values, thereby enhancing both individual and organizational safety performance.

Safety controlling pertains to a leader's enforcement of safety regulations and oversight of employee compliance. This dimension includes setting clear safety expectations, monitoring performance, and implementing corrective actions when necessary. Wu et al. (2008) emphasized that safety controlling, through consistent enforcement of rules and monitoring, enables leaders to establish accountability and ensure compliance. This proactive oversight is crucial in preventing unsafe acts and maintaining a safe work environment.

As highlighted by Subramaniam et al. (2023) and Adi et al. (2020), the combination of safety caring, coaching, and controlling reflects a blend of transformational and transactional leadership approaches, which have been empirically linked to improved safety performance.

Co-Worker Support

Co-worker support refers to the assistance, encouragement, and reinforcement employees provide to one another in promoting a safe workplace. Guo et al. (2019) and Dutta and Rangnekar (2022) emphasized that effective support in the workplace includes both emotional support (e.g., empathy and encouragement) and instrumental support (e.g., sharing safety information or addressing unsafe behaviors), both of which are essential for promoting a strong safety climate.

This construct is increasingly recognized as a key social resource that influences individual safety behaviors. Grocutt et al. (2023) and Seo and Lee (2023) indicated that co-worker support can play a moderating role, influencing how organizational factors like safety culture and leadership translate into actual safety performance outcomes. When peer support is high, employees are more likely to follow safety protocols and engage in safety-promoting behaviors, even in the absence of close supervision. This is particularly relevant in SMEs, where formal monitoring may be limited, and peer influence becomes a central driver of behavior.

Proposed Conceptual Framework

Drawing upon Social Exchange Theory (SET) and Leader-Member Exchange (LMX) Theory, this conceptual paper proposes a framework that explains how safety culture and safety leadership influence safety performance, with co-worker support as a moderating variable. The model integrates organizational factors (culture and leadership), individual safety behaviors (compliance and participation), and social influences (peer support), particularly within the context of Malaysian manufacturing SMEs.

In the proposed framework:

- Safety culture (via management commitment, communication, training, and procedures) shapes employees' safety norms and expectations.
- Safety leadership (via caring, coaching, and controlling) directly influences employee motivation and role modelling for safety.
- Co-worker support enhances or buffers the effectiveness of both culture and leadership by reinforcing safety messages and behaviors at the peer level.
- Safety performance is conceptualized through the dual dimensions of compliance and participation.

This framework reflects a multidimensional approach to safety, acknowledging that formal systems, leadership behaviors, and peer dynamics interact to influence safety outcomes. The proposed framework suggests that safety culture and safety leadership influence safety performance, and that co-worker support moderates these relationships.

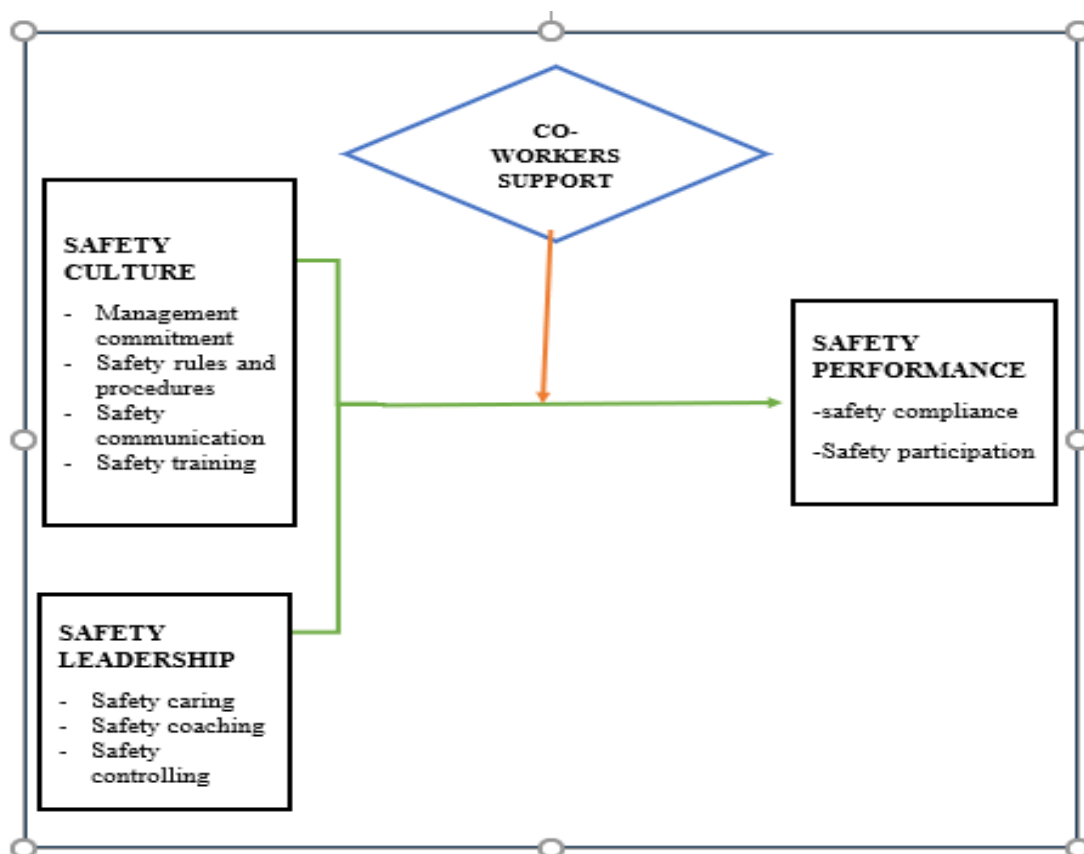


Figure 1. Proposed Conceptual Framework

The framework posits that a strong safety culture, represented by management commitment, safety communication, safety training, and safety rules which along with effective safety leadership demonstrated through caring, coaching, and controlling behaviors, will positively

influence employees' safety performance, both in terms of compliance and participation. Furthermore, co-worker support is expected to strengthen these relationships by fostering a collaborative environment that encourages shared responsibility and mutual reinforcement of safety behaviors.

By addressing a notable gap in the existing literature, this conceptual framework serves as a foundation for future empirical investigations and practical interventions aimed at improving safety performance in SMEs. It emphasizes the need for holistic and multi-level approaches to safety, incorporating organizational culture, leadership influence, and peer support to build safer and more resilient workplaces.

Griffin and Neal (2000) and Zhu et al. (2020) emphasized that these dimensions help capture the complexity of employee responses to safety-related cues, allowing for a deeper insight into safety motivation and behavior at the workplace. The predictor variables, safety culture and safety leadership, are each multidimensional, and their influence is assessed at the level of their constituent components. Guo et al. (2019) and Grocutt et al. (2023) highlighted the significance of social interaction in workplace safety. Building on this, co-worker support is proposed to moderate the relationship between key organizational factors and safety performance.

Conclusion

In conclusion, this conceptual paper presents an integrated framework that highlights the influence of safety culture and safety leadership on safety performance in Malaysian manufacturing SMEs, with co-worker support serving as a key moderator. The model emphasizes that dimensions such as management commitment, safety training, communication, and leadership behaviors, including caring, coaching, and controlling, are critical to improving safety compliance and participation. Co-worker support reinforces these efforts by fostering peer accountability and shared safety norms. Grounded in Social Exchange Theory and Leader-Member Exchange Theory, this framework addresses a significant gap in the existing literature and offers practical implications. Future research should empirically validate the proposed model, explore sectoral comparisons, and consider additional moderators such as psychological safety. Practically, SME leaders are encouraged to actively demonstrate safety commitment, institutionalize peer support systems, and invest in targeted safety training. Policymakers should provide tailored support to SMEs through simplified compliance tools and accessible safety programs to enhance workplace safety outcomes.

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