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Safety First, Performance Next: Exploring the Interplay between Perceived Safety Climate and Employee Performance

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Abstract

This study probes the influence of a perceived safety climate on task and contextual performance. Using the Job Demand Resource model, it's hypothesized that a pronounced safety climate counterbalances high job demands. A questionnaire, grounded in established instruments of safety climate and employee performance, was administered to 46 construction workers. SEM-PLS analysis of this purposive sample highlighted that a perceived safety climate significantly elevates both performance facets. Such results mirror past studies, positing that safety-centric environments not only amplify task outputs but also inspire proactive organizational behaviors. Despite its insights, the study's reliance on self-reported data and its sampling approach pose limitations, hinting at future research directions. From a managerial standpoint, this underscores the pivotal role of a robust safety culture, not just in risk deterrence but also as an anchor for optimal employee output.

Keywords: safety climate, individual performance, occupational health and safety (OHS), organizational climate

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1. INTRODUCTION

In today's rapidly evolving business landscape, the emphasis on workplace safety cannot be overstated. This is even more pronounced within sectors inherently fraught with risks, such as infrastructure and construction (Gillen et al., 2002; Zheng et al., 2022). The ramifications of lapses in safety protocols are manifold, often leading to detrimental ecological, societal, and considerable financial setbacks for involved organizations (Beus et al., 2019). These unfortunate incidents, some of which have captured headlines and stirred public sentiment, underscore the pressing need for businesses to fortify their safety measures. It is no wonder that, given these stark consequences, there has been an intensified surge in scholarly endeavors to explicate the intricate facets surrounding safety-related phenomena (Syed-Yahya et al., 2022).

Within the aforesaid high-risk industries, the urgency to delve deeper into initiatives that safeguard the health and well-being of the workforce is palpable. The stakes are high. Thus, ensuring that employees can execute their duties without fear of injury or harm is not just an ethical imperative but a business one. Based on this rationale, the concept of "safety climate" has emerged as a focal point in academic and industry discussions (Zheng et al., 2022).

The concept of "safety climate" has long held a place in academic discussions, having been explored for more than four decades. Its enduring presence underscores its significance in the realm of occupational health. Broadly speaking, safety climate pertains to perceptions regarding the prioritization and importance of safety (Zohar, 1980, 2003). When viewed at the group or organizational level, this perception is understood as a collective or shared sentiment. In contrast, the individual level, also called perceived safety climate, indicates a person's own perception of the emphasis on safety.

The journey to understand safety climate has been comprehensive and multi-faceted in these four decades. Researchers, irrespective of their sectoral affiliations—whether healthcare, transportation, manufacturing, or other service sectors—have endeavored to elucidate the nuances and implications of this concept (Zohar, 1980, 2003; Bamel et al., 2020). Their collective efforts have borne fruit, culminating in a plethora of literature reviews. These reviews not only shed light on the evolving trends in safety climate research but also aid in refining the metrics and scales used to measure it across diverse workplace settings.

Despite the fast amounts of literature and the depth of understanding that is achieved within the organizational behavior literature, a significant portion of the research landscape focuses on the direct and immediate outcomes of safety climate. These outcomes often revolve around safety protocols, accident rates, and immediate work environment impacts. Yet, the broader ramifications of the safety climate on holistic employee performance remain curiously under-explored (Syed-Yahya et al., 2022). This gap persists across individual, group, and organizational levels. Therefore, it is argued that while safety performance is important, the role of safety climate in shaping another facet of performance is largely underexplored.

Employee performance is a multifaceted construct. The most common dimensions of employee performance are task-related performance and contextual performance (Koopmans et al., 2014). The former pertains to how efficiently and effectively employees execute their primary job responsibilities. At the same time, the latter delves into behavior that supports the social and psychological work environment, such as helping colleagues or showing initiative.

Hence, based on the aforesaid rationale, this research aims to bridge this evident gap. By examining the interplay between perceived safety climate and these dual facets of employee performance using job-demand resource lenses (Demerouti et al., 2001; Bakker and Demerouti, 2007). it aims to present a more holistic understanding of how safety climate resonates through an organization, influencing not just immediate safety performance but also the broader spectrums of employee performance.

The structure of this paper is as follows: this initial section provides the rationale for undertaking this research. Subsequently, a review of the relevant literature is

presented, followed by an outline of the methodology employed. After delineating the research methods, findings are discussed in detail. The paper concludes with a summarization of the research and its implications.

2. LITERATURE REVIEW

This section provides a brief about Job Demand Resource Model and the linkage between safety climate and employee performance.

2.1. Job Demand Resource Model

The JD-R model asserts that every job, despite its unique stressors, can be categorized into two main groups: job demands and job resources (Demerouti *et al.*, 2001; Bakker and Demerouti, 2007). Job demands encompass those physical, psychological, social, or organizational elements that require ongoing physical or psychological effort, often leading to both physiological and psychological consequences. In contrast, job resources refer to those facets of a role that not only assist in meeting work objectives but also mitigate job demands and promote individual growth, learning, and development. This would include opportunities for advancement, supervisor guidance, clarity in roles, and a degree of autonomy.

The JD-R model contends that each job, irrespective of its distinct stressors, can be categorized into two primary classifications: job demands and job resources (Bakker & Demerouti, 2007; Demerouti et al., 2001). Job demands cover the physical, psychological, social, or organizational facets of a job that necessitate continuous physical or psychological exertion, and these often have physiological and psychological repercussions. In stark contrast, job resources encompass those aspects of a role that not only aid in achieving work goals but also counterbalance job demands and bolster personal growth, learning, and development. This encompasses opportunities for progression, mentorship from supervisors, clear role definitions, and a measure of autonomy.

Delving further into the context, it is worth noting that perceived safety climate serves as a vital job resource, especially when confronted with significant job demands. For instance, working onsite on construction projects is recognized as both stressful and fraught with risk (Zheng *et al.*, 2022). In such scenarios, a favorable safety climate is invaluable, acting as a buffer against the occupational risks and demands intrinsic to such roles.

2.2. Perceived Safety Climate and Employee Performance

In line with the JD-R model's tenets, when the job demands — inherent challenges and stressors of a role — are high, having robust job resources can counterbalance these demands. Within this framework, the perceived safety climate surfaces as a crucial resource. When employees believe their environment prioritizes safety, it bolsters their confidence, reduces distraction due to safety concerns, and subsequently augments both their efficiency and productivity.

A confluence of empirical studies fortifies this linkage. Research by Haluk (2016), Kiyani et al. (2019), and Setiono et al. (2019) have identified a positive causal

relationship between the safety climate and employee performance. This study propounds that when safety is both prioritized and actualized, it acts as a catalyst, enhancing employees' task-specific outputs. The rationale behind the argument is based on the JDR lenses.

In an environment perceived as safe, the enhancement of an employee's job resources enables them to focus more intently on meeting their job demands, thereby amplifying task performance. The reduced cognitive burden associated with safety concerns allows employees to channel their resources more directly toward task fulfillment.

H1: A perceived Safety Climate has a positive influence on task performance.

Beyond immediate tasks, a solid safety climate also boosts behaviors that fortify an organization's social and psychological capital. This bolstering of both forms of capital serves as an added job resource for employees. Consequently, employees become more inclined to exhibit proactive behaviors. These manifest in contextual job demands such as active team participation and innovative problem-solving.

H2: Perceived Safety Climate has a positive influence on contextual performance.

The conceptual model can be seen in the figure 1 below.

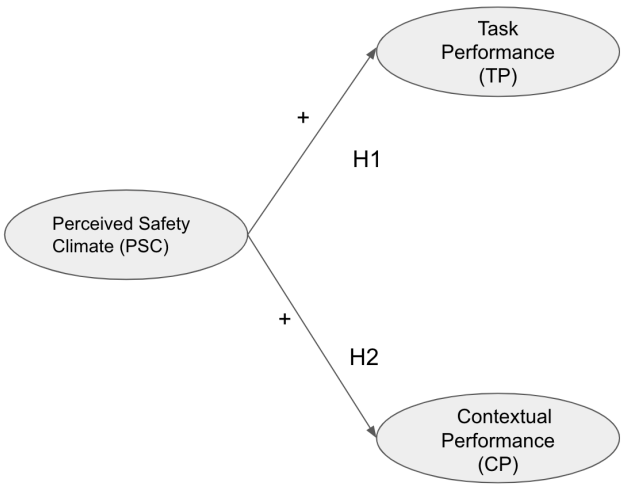

Figure 1. Conceptual Model

3. METHODOLOGY

This study, rooted in quantitative analysis, unfolded within a construction enterprise, utilizing a purposive, non-random sampling method. The construction sector was chosen given its high-risk nature. This setting offers a fitting backdrop to delve into the intricacies of safety climate and its potential impact on performance. Eligibility criteria for participants stipulated that individuals be permanent members of the company with at least a year of experience. This criterion aimed to ensure

respondents were well-acquainted with the company's internal mechanisms and the overarching safety paradigms in the construction milieu.

For data collection, questionnaires were disseminated via the company's integrated digital channels—emails, team-centric chat platforms, and individual messaging systems. Utilizing a digital surveying mode afforded participants the convenience of responding amid the demanding schedules typical of the construction domain.

Prior to engaging with the survey, a confidentiality clause was presented, reiterating the commitment to data privacy and offering participants the choice to retain their anonymity. As for the sample size, we took guidance from Hair et al. (2021), which proposes a base figure of ten participants for each trajectory in the research framework. With two trajectories in our construct, a minimum of 20 participants was deemed essential. Nevertheless, aiming for richer insights and to strengthen the study's validity, a cohort of 46 participants was assembled for this research.

3.1. Measures

Safety Climate: The perception of safety within an organization was assessed using a questionnaire developed by Beus et al. (2019). This instrument captures various facets of safety culture and the overall climate associated with safe work behaviors. Examples of items from the questionnaire include: "My supervisor strictly enforces the safe working procedures in my workgroup"; "My co-workers always follow safety procedures"; "There is adequate safety training in my workgroup", and “The reward system in my workgroup promotes high performance only when work is conducted safely". Respondents were asked to rate their agreement with these statements on a five-point Likert scale, which provided insights into their perceptions of the safety climate in their work environment.

The dimensions of Task and Contextual Performance were gauged using the Individual Work Performance scale, as proposed by Koopmans et al. (2014). Items reflecting task performance include statements like, "I efficiently managed my tasks to meet deadline" and "I executed my job responsibilities effectively with limited resources". Conversely, for contextual performance, respondents considered statements such as, "I embraced demanding assignments when presented" and "I willingly took on additional roles". All the statement is answered by the respondents by choosing their agreement level for each statement using a five-point Likert scale.

3.2. Data Analysis

Upon collecting the data, the chosen analytical tool was the Structured Equation Model-Partial Least Square (SEM-PLS). This statistical method facilitates a comprehensive understanding of the intricate connections among the observed variables. The advantage of SEM-PLS over methods like SEM-Covariance Based (SEM-CB) is its ability to scrutinize such relationships without imposing normality assumptions and without necessitating an extensive sample size. This technique aligned perfectly with the study's aim to decipher the outcomes of temporal leadership, as highlighted by Hair et al. (2021).

The SEM-PLS approach is comprehensive; it evaluates the outer model, connecting the observable variables to their corresponding latent ones, and the inner model, disclosing the interconnections amongst the latent variables. According to guidelines presented by Hair et al. (2021), the evaluation of these models demands meticulous scrutiny. For the outer model, considerations were the concurrent validity and reliability.

The Average Variance Extracted (AVE) and the loadings of indicators were used to gauge the concurrent validity of the outer model. Meanwhile, the reliability facet was delved into by analyzing composite reliability. Indications were that the composite reliability surpassed the designated acceptable range. Post this evaluation, the discriminant validity is assessed by examining Heterotrait-Monotrait Ratio (HTMT). HTMT is a more rigorous metric to assess discriminant validity than fornell lacker criterion and cross-loading (Henseler et al., 2015).

After the outer model's evaluation, attention was directed to the inner model. The intent was to illuminate how temporal leadership influences task and contextual performance, particularly in the context of the construction domain. Three primary measures were the focus when assessing the inner model: the R-squared (R^2), the F-square (f^2), and the Q-square (Q^2)

The r^2 metric underscores the predictive power of the model, quantifying the variance in dependent variables attributed to the independent ones. Cohen (1988) demarcated its significance levels: values surpassing 0.25 are deemed substantial, those above 0.10 are moderate, and those exceeding 0.02 are considered weak. The f^2 metric furnishes insights into effect magnitude, depicting the r^2 variation upon excluding a specific exogenous construct. (Cohen, 1988) classified the effect sizes: 0.02 is small, 0.15 is medium, and 0.35 is large. Lastly, the Q^2 metric, pivotal for PLS path models, gauges the model's overall predictive prowess. A Q^2 value exceeding zero stands as a testament to the model's predictive relevance, as expounded by Hair et al. (2017).

4. RESULT AND DISCUSSION

4.1. Respondent Profile

Table 1 illustrates the participants' demographic information. Predominantly, male participants formed the major chunk of the survey. Most participants boasted a bachelor's degree and carried work experience ranging from 1-5 years. In terms of duration with the current firm, a notable number had been affiliated for 1-5 years, while a sizable group had been associated for less than a year. The participants hailed from various sectors within the construction entity. The Production sector witnessed the highest participation, trailed by an almost similar count from both the Engineering and Commerce sectors. Lesser numbers stemmed from Quality Assurance, Equipment, Health and Safety, and the Finance sectors.

Table 1. Demographic Profile of Respondents

Demographic Profile		Frequency	%
Sex	Male	39	85%
	Female	7	15%
Education	High School Diploma	9	20%
	Diploma	13	28%
	Bachelor	24	52%
Work Experiences	Less than 1 year	13	28%
	1-5 years	29	63%
	6-10 years	3	7%
	11-15 years	1	2%
Tenure	Less than 1 year	18	39%
	1-5 years	27	59%
	6-10 years	1	2%
Department	*Enginering*	7	15%
	Health and Safety	4	9%
	Commerce	7	15%
	Finance	5	11%
	Production	12	26%
	Equipment	5	11%
	Quality Assurance	6	13%

Source: Data processed (2023).

4.2. Outer Model

As stated in the data analysis, the convergence validity of the outer model is assessed by examining indicators of outer loading and AVE. As shown in Figure 2, all the indicators loading is above 0.4. Therefore, no deletion is needed (Hair, 2021).

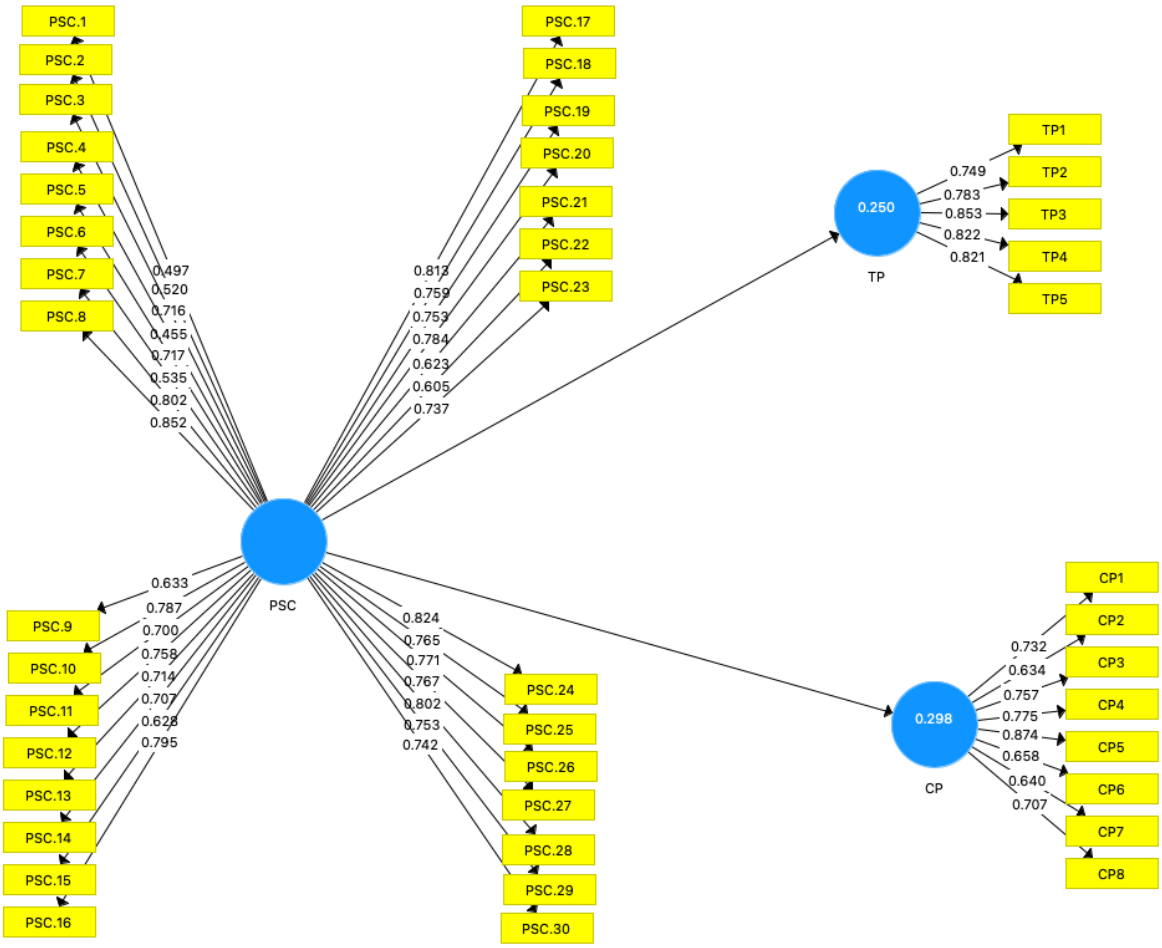

Figure 2. Outer Loading of Each Construct

After examining the outer loading, as shown in Table 2, the AVE of the three constructs in this research is above the recommended value of 0.5. Thus, the convergence validity of the model is established. In addition to convergence validity, discriminant validity is also established because the value of HTMT is below 0.9 (Henseler et al., 2015).

Table 2. Outer Loading Assessment

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)	HTMT	
				Contextual Performance (CP)	Task Performance (PSC)
Contextual Performance (CP)	0,87	0,90	0,53		
Perceived Safety Climate (PSC)	0,97	0,97	0,52	0,547	
Temporal Performance (TP)	0,87	0,90	0,65	0,873	0,522

Source: Data processed (2023).

4.3. Inner Model

As exhibited in Table 3, all paths in the study are found to be significant, as shown by the p-values, all of which are less than 0.05, establishing them as statistically significant. Furthermore, the R-squared values indicate the proportion of variance in the dependent variables that can be attributed to the independent variables. The values for both CP and TP are above 0.25, suggesting a substantial level of predictive accuracy in the model.

The F-square values give insight into the effect size of the perceived safety climate on both CP and TP. With values exceeding 0.15 for both paths, this implies a medium to large effect, emphasizing the influence of the safety climate on performance metrics.

Lastly, the Q-square values serve as a validation criterion for the model, assessing its predictive relevance for the dependent constructs. Given that both Q-square values are greater than zero, this highlights the model's adequate predictive capacity. In essence, the results showcase not only the statistical significance of the paths but also the practical relevance of perceived safety climate in influencing performance in the construction sector.

Table 3. Inner Model Assessment

	Path beta	P-Value	r-square	f-square	Q-Square
PSC -> CP	0,546	0,000	0,298	0,425	0,139
PSC -> TP	0,500	0,000	0,250	0,333	0,149

Source: Data processed (2023).

4.4. Discussion

Building upon the foundational principles of the JD-R model, it becomes clear that the perceived safety climate acts as a significant job resource. Regarding task performance, which is about how efficiently and effectively employees handle their primary job responsibilities, the perceived safety climate has a notable influence. When an organization's culture emphasizes safety, it allows employees to operate without the constant worry of safety concerns, letting them focus more intently on their tasks. This idea aligns well with findings from Haluk (2016), Kiyani et al. (2019), and Setiono et al. (2019). Both studies highlight that when safety is a central focus, it can enhance task-specific outcomes. In a workplace where safety concerns are minimized, employees can direct their efforts and attention toward task completion more efficiently. This evidence solidifies our understanding and provides strong support for Hypothesis 1: Perceived Safety Climate has a positive impact on task performance.

Moving beyond direct tasks, the broader domain of organizational behavior, contextual performance, comes into play. Contextual performance involves behaviors that might not be part of one's direct job role but contribute positively to the workplace environment. A robust safety climate provides employees with a sense of security, making them more willing to engage in behaviors that go beyond their job descriptions, such as participating more actively in team activities or offering innovative solutions to problems. Thus, we find substantial support for Hypothesis 2,

which posits that a perceived safety climate positively affects contextual performance.

In conclusion, the perceived safety climate plays a central role in influencing both the task and contextual performance of employees, setting the stage for overall organizational growth and success.

5. CONCLUSION

This research provides evidence of the influence of the perceived safety climate on both task and contextual performance. When employees perceive a strong emphasis on safety within their work environment, their task efficiency and overall participation in contributing to a positive workplace environment are enhanced. Such findings suggest that organizations, especially those in industries like construction, can benefit substantially by fostering a robust safety climate. This will not only boost the immediate task-related outcomes but also cultivate a collaborative and innovative work culture. However, while these conclusions are grounded in rigorous analysis, they are accompanied by some limitations that warrant a cautious interpretation.

5.1. Managerial Implication

The findings underscore the crucial role a perceived safety climate plays in enhancing both task and contextual performance in organizations, particularly where safety is paramount. For managers, this emphasizes the multifaceted benefits of fostering a strong safety culture. By ingraining safety as an organizational value, not just a procedural requirement, managers can optimize employee focus and productivity, fostering a sense of unity and shared responsibility. Regular training sessions underscore this commitment, while a feedback loop can spotlight areas for improvement. As an added incentive, recognizing adherence to safety protocols can motivate continued vigilance. Beyond immediate task performance, this climate can lead to reduced absenteeism and bolster the organization's reputation, ensuring long-term benefits. In essence, prioritizing safety is not just about minimizing risks but maximizing performance and organizational cohesiveness.

5.2. Limitation of Research and Suggestion for Further Research

This study, while providing valuable insights, has certain constraints. The research's reliance on purposive non-probability sampling for a singular construction company means that while we gain depth, we might be compromising on the breadth of applicability. Such an approach could potentially challenge the extrapolation of these findings to other sectors or even other construction entities with distinct organizational nuances.

Furthermore, the study's dependence on self-reported measures introduces the potential for common method bias. This means that the employees' self-assessment of their performance may not always be objective, possibly skewed by personal biases, which might challenge the integrity of the conclusions drawn.

The chosen cross-sectional design is yet another factor constraining the determination of cause-and-effect relationships between perceived safety climate

and performance measures. A longitudinal approach, tracking changes over time, might offer more concrete causal linkages.

Keeping these limitations in view, future studies are encouraged to broaden the scope. Including a wider, more varied sample across industries could enhance the findings' universality. Moreover, incorporating objective performance metrics or combining self-reported data with alternative sources can enhance the reliability and mitigate biases.

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