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Beyond Compliance in Tourism: Fostering Proactive Safety Culture in Multi-Crisis Hospitality

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ABSTRACT: The current study explores the effect of safety leadership on employees' safety performance within a multianxious hospitality industry, with belief restoration as mediation and perceived susceptibility as moderation. The tourism and hospitality sector is especially vulnerable to climate-related disruption, including heavy rainfall, earthquakes, volcanic eruptions, and the collapse of infrastructure, resulting in increased occupational safety-related uncertainty for frontline workers. In such cases, successful safety performance depends on regulatory compliance and leadership, as well as psychological safety. A cross-sectional survey was conducted among 106 frontline employees across five hotels in Yogyakarta, Indonesia, a tourism destination exposed to recurring environmental hazards. Data were analyzed using Partial Least Squares Structural Equation Modelling (PLS-SEM). Results indicate that safety leadership does not exhibit a significant direct association with employee safety behavior. Instead, leadership operates indirectly through belief restoration, supporting a full mediation pattern at the structural level. Perceived susceptibility strengthens the relationship between safety leadership and belief restoration and shows a marginal interaction effect on safety behavior. Theoretically, the study refines safety leadership research by modelling belief restoration as a domain-specific cognitive recovery pathway linking leadership cues to safety engagement under prolonged disruption. The findings suggest that in multi-crisis hospitality environments, leadership influence may depend less on direct compliance mechanisms and more on employees' renewed confidence in the organization's ability to manage safety threats.

Keywords: safety leadership, employee safety behavior, belief restoration, perceived susceptibility, tourism and hospitality, climate-related crisis, multi-crisis environment, SEM.

I. INTRODUCTION

There have been significant developments in safety leadership research; however, several influential models still conceptualize crises as episodic and relatively short-lived events that eventually allow organizations to return to normal operations. Under this assumption, leadership influence is often presumed to translate directly into employee compliance and safety participation. This discrepancy becomes particularly evident in the tourism and hospitality sector. For instance, the tourism and hotel industry has been strongly affected by economic downturns [1]. At the same time, climate-related environmental hazards (for example, extreme rainfall, earthquakes, volcanic eruptions, and infrastructure disruptions) are increasingly compounded by economic instability and broader environmental uncertainty, creating crisis conditions that extend beyond

isolated natural disasters [1, 2]. These disruptions have also affected employees' mental health and anxiety, as many are required to work in vulnerable environments characterized by persistent uncertainty, thereby threatening not only business continuity and destination competitiveness but also the level of risk exposure faced by workers [3]. In such contexts, safety becomes more than a matter of regulatory compliance; it becomes central to organizational resilience and long-term survival [4].

Over the past two decades, safety leadership research has consistently demonstrated that leaders play a critical role in shaping employee safety behavior through communication, role modelling, and the reinforcement of safety norms. However, in situations characterized by prolonged and overlapping disruptions, leadership messages may not translate directly into safety behavior as traditional models suggest. Instead, employees may first need to regain confidence in their organization's ability to protect them before consistently engaging in safety compliance and participation [5-7]. Contemporary tourism destinations increasingly operate under conditions that can be described as multi-crisis environments, where organizations face overlapping and recurring disruptions rather than isolated crisis events. In crisis management literature, a crisis is typically understood as a disruptive event threatening organizational functioning, while hazards refer to underlying sources of potential harm and risk reflects the probability that such harm may occur. In many tourism regions, these elements interact simultaneously. Environmental hazards such as earthquakes, volcanic eruptions, extreme rainfall, and infrastructure fragility may coexist with economic and operational instability. When such conditions persist over time, organizations operate not within a single crisis episode but within an ongoing environment of uncertainty and recurring disruption. In these situations, employees repeatedly reassess whether their organization remains capable of maintaining safety and operational stability [1, 2, 8-19].

Previous research has shown that safety leadership is crucial for enhancing employee safety behavior [5]. Leaders affect safety, not only through formal rules and procedures, but also through cognitive mechanisms related to employees' perceptions of leader support for and concern about their well-being [6-9]. Specifically, belief restoration, which is employees restored confidence in their organization's ability and willingness to control crisis-related safety risks, is an important mediating process underlying the relationship between safety leadership and employee safety behavior [6, 10]. Previous studies in hospitality organizations have also shown that leadership is an important influence on staff's safety issues and can affect employees' behavior through the impact of its effect on the employee's crisis attitude [10-12].

Perceived susceptibility, which refers to the perception of one's own vulnerability towards risk, has received more attention in recent research activity, as a context variable that conditions the effectiveness of safety leadership [13]. Although early theoretical speculation suggested that higher risk perception could result in panic or avoidance, empirical evidence has surprisingly supported the role of perceived susceptibility as a direct moderator of these latter relationships [12]. This indicates that increased self-perception of risk may enhance, rather than detract from, the motivational force of leadership by increasing vigilance to safety cues. Yet, even though perceived susceptibility influences a mediator in the direct path, studies that have examined the moderating role of perceived susceptibility in the indirect relationship between safety leadership and employee safety behavior through belief restoration are scarce and relatively inconsistent [14-17].

Although prior studies have demonstrated the importance of safety leadership in shaping employee safety behavior, three limitations remain in the existing literature. First, most empirical evidence has examined leadership effects in relatively stable environments or during single crisis episodes, leaving limited understanding of leadership processes in contexts characterized by prolonged and overlapping disruptions [6, 11, 18]. Second, many studies emphasize direct leadership behavior relationships, while the psychological processes through which leadership influence is interpreted by employees under uncertainty remain less explored [6, 10, 17]. Third, although perceived susceptibility has been recognized as an important contextual variable influencing behavioral responses to risk, its role as a boundary condition shaping leadership effectiveness in complex crisis environments has received limited empirical attention [12, 14, 16]. To clarify how these limitations are distributed across existing research streams, a structured synthesis of prior studies is presented in the Related Work section (see Table 1). The table summarizes what is currently known, partially understood, and still underexplored in the literature on safety leadership and crisis environments, thereby helping position the present study within the broader research landscape.

Addressing these gaps requires examining how leadership signals translate into safety behavior through employees' cognitive reassessment of organizational safety capability. Table X synthesizes existing studies and classifies what is currently known, partially known, and still underexplored in the literature. This structured overview helps position the present study within the broader research landscape and clarifies the theoretical contribution of examining safety leadership processes in multi-crisis hospitality environments. Building on this structured gap mapping, the present study focuses on the underexplored intersection of safety leadership, cognitive recovery processes, and contextual risk perception in multi-crisis hospitality environments. Specifically, we propose that safety leadership may influence employee safety behavior indirectly through belief restoration, while perceived susceptibility functions as a boundary condition shaping how employees interpret leadership signals under conditions of heightened uncertainty.

This study contributes to the literature in three ways. First, it refines safety leadership theory by explaining leadership influence in multi-crisis hospitality settings as a psychologically mediated process rather than a direct compliance mechanism. Second, it positions belief restoration as a domain-specific post-disruption cognitive recovery mechanism through which employees reassess organizational safety capability under recurring disruption [10, 17]. Third, it examines perceived susceptibility as a contextual boundary condition that helps explain when leadership signals become behaviorally meaningful under prolonged uncertainty [12, 14, 16]. More specifically, the research questions of this study are:

- What is the impact of hotel safety leadership on employee safety behavior in multi-crisis hospitality contexts?
- Does belief restoration act as a mediator in the relationship between hotel safety leadership and employee safety behavior under conditions of uncertainty?
- Does perceived susceptibility moderate the direct or indirect relationships between safety leadership and employee safety behavior?

The study was conducted in the tourism industry in Yogyakarta, Indonesia, a major tourist destination with relatively high exposure to natural-hazard uncertainty, including extreme rainfall, earthquakes, volcanic eruptions, and infrastructure vulnerability [20-24]. Although major natural disasters do not always occur, the persistence of climate-related risk factors and their recurring patterns generate a chronic perception of uncertainty regarding hotel operations and hotel workers' safety [25, 26]. This background provides an appropriate environment for the study of safety leadership and employee safety behavior in multi-crisis hospitality settings.

II. RELATED WORK

This study is primarily grounded in Social Exchange Theory (SET) [27], which suggests that employees reciprocate favorable treatment from leaders and organizations through positive attitudes and behaviors. In the context of safety management, leadership behaviors that signal concern for employee well-being and organizational commitment to safety can encourage employees to respond with greater engagement in safety practices. Within this exchange process, employees interpret leadership cues and reassess whether their organization remains capable of protecting them during ongoing disruptions. Complementary perspectives, including the Health Belief Model (HBM) and motivational theories, help explain how perceived vulnerability and individual cognitive processes shape the interpretation of these leadership signals [6, 12].

While social exchange theory provides the primary explanatory framework, complementary perspectives help clarify the cognitive conditions under which leadership signals become behaviorally meaningful. In particular, the concept of perceived susceptibility originates from the HBM, which proposes that individuals' behavioral responses to potential threats depend partly on their perception of personal vulnerability to those threats [6, 13]. In organizational safety contexts, employees who perceive higher levels of risk may pay greater attention to leadership signals related to safety. Other motivational perspectives, such as Self-Determination Theory and the Theory of Planned Behavior, provide additional insights into how intrinsic motivation, perceived control, and normative expectations may shape safety behavior beyond formal compliance [28–32]. However, these perspectives are treated here as supporting mechanisms rather than the primary theoretical

foundation. To provide a clearer overview of the current state of research, Table 1 summarizes key streams of literature on safety leadership, psychological mechanisms, and crisis environments. The table highlights areas where empirical evidence is well established as well as domains that remain underexplored, particularly in the context of prolonged and overlapping disruptions in hospitality settings.

Table 1. Structured overview of prior studies and research gaps in safety leadership in multi-crisis hospitality contexts.

Research Stream	What is Known	What is Partially Known	What Remains Underexplored
Safety leadership and employee safety behaviour	Leadership behaviours influence safety compliance and participation across industries, including hospitality [3, 10, 17].	Most evidence is derived from relatively stable environments or single crisis events [6, 11].	How safety leadership influences employee behaviour under prolonged and overlapping crisis conditions.
Psychological mechanisms of safety leadership	Leadership can influence safety behaviour through employee perceptions such as trust and leader support [8, 9].	Crisis-related psychological processes have been examined in limited contexts, often during single disruptions such as pandemics [17].	The role of belief restoration as a post-disruption cognitive recovery mechanism linking leadership cues to safety behaviour under recurring disruptions.
Hospitality crisis environments	Tourism and hospitality organisations face exposure to environmental hazards and operational uncertainty [1, 2].	Research often examines isolated disruptions such as natural disasters or economic downturns [18, 19].	How overlapping and recurring disruptions shape leadership safety processes in hospitality settings.
Risk perception and safety behaviour	Perceived susceptibility influences individuals' responses to safety-related threats [12, 14].	Risk perception has often been examined as a direct predictor of behaviour [45].	The role of perceived susceptibility as a boundary condition of the indirect leadership behaviour process under chronic uncertainty.

To clarify the theoretical structure of the proposed model, this study integrates the relevant concepts into a hierarchical framework. SET provides the core explanatory logic for understanding how leadership behaviors influence employee responses (Figure 1). Within this framework, belief restoration represents the cognitive mechanism through which employees reassess organizational safety capability following repeated disruptions. Perceived susceptibility functions as a contextual boundary condition that shapes how employees interpret leadership signals under conditions of perceived risk [12, 13]. The broader context of multi-crisis hospitality environments provides the situational conditions within which these processes unfold.

This hierarchical structure distinguishes between the core explanatory logic of leadership employee exchange, the psychological mechanism through which leadership influence operates, and contextual boundary conditions shaping employee responses in multi-crisis environments. The resulting integrative framework is illustrated in Figure 1.

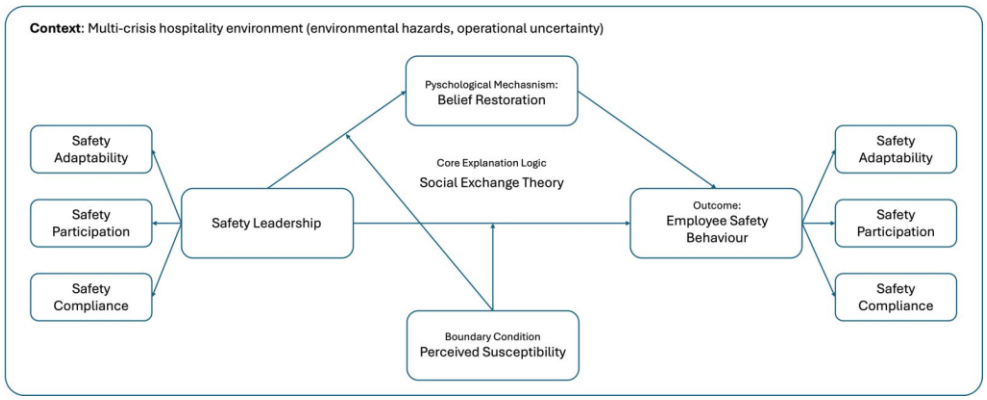

FIGURE 1. Conceptual framework of safety leadership, belief restoration, and safety behavior in multi-crisis hospitality environments.

The proposed model can also be understood as a three-stage process. In the first stage, safety leadership behaviors act as organizational signals indicating commitment to employee protection and safety. In the second stage, employees cognitively reassess the organization's capability to manage safety risks, resulting in belief restoration. In the third stage, this renewed confidence becomes associated with employees' engagement in safety-related behaviors such as compliance, participation, and adaptive safety responses. Given the cross-sectional design of the present study, these relationships are interpreted as structural associations consistent with the proposed process rather than definitive causal effects. Based on this conceptual framework, the following sections develop the specific hypotheses examined in this study.

1. SAFETY LEADERSHIP AND EMPLOYEE SAFETY BEHAVIOUR

Safety leadership is an essential element of successful safety management systems, especially in high-risk industries and those with crisis-prone service segments, such as tourism and hospitality. Safety leaders are not only enforcers of safety rules and regulations but also proactive agents who help to create organizational norms and enable culture change towards a set of values about what is right, respected, or important in relation to promoting the desired safety [11, 33, 34]. Meanwhile, amid pools of risk and uncertainty in the workplace, this type of leadership is key to establishing trust and resilience.

Safety leadership, in modern definitions, encompasses safety coaching, motivation, control, and care. These forms influence employees' processes of evaluating safety risks, internalizing safety rules, and ultimately behavior under pressure [34, 35]. Leaders have a responsibility to make clear their safety expectations for workers, role-model safe behavior, provide feedback and training, and allocate resources that facilitate safer work practices [11, 36]. These leadership attributes, in particular, come to the fore in high-variability industries, including tourism, where front-line staff commonly interpret ambiguous risks to inform real-time responses. In such situations, workers are more inclined toward leadership for stability and behavioral direction.

Safety behavior encompasses a spectrum of employee actions designed to prevent harm to self, colleagues, and the organization [37]. Traditionally, it has been divided into two dimensions: safety compliance and safety participation. Safety adaptability needs to be added as the third central feature, according to recent research, especially when confronting dynamic and unstable hazards such as those in hospitality [11, 38, 39]. Safety adaptability is an employee's creativity to modify when confronted with new, unclear, or fast-emerging risks like those that emerge from the confluence of climate-related disruptions. In these environments, where standard protocols may be inadequate or absent, adaptive responses are not merely desirable but necessary. Leadership that promotes flexibility and proactive problem-solving will emerge as a key reservoir of this kind of behavior [40, 41].

The relationship between safety leadership and safety behavior can be well explained by social learning theory [42]. The theory states that people learn from one another via observation, imitation, and modelling. In

the organizational context, employees respond to leadership by focusing on cues that come from leaders in the form of verbal messages, observable practices and emotions to decide what is expected and normatively appropriate. Such observational learning over time results in greater congruence of behavior with organizational objectives, such as safety. Leadership has the function of directing employees' attention toward safety and overcoming ambiguity in crises, which aids them to priorities safe reactions [33]. That makes it especially applicable to new, uncertain, or risky environments.

Empirically, the validity of such a theoretical linkage is well supported. In industries for example mining and construction, health care, tourism it was reported that safety behavior of employees is influenced thanks to managers [3, 10, 17]. In the lexicon of hospitality, fairly, they have been asked to play both by the book and as organizer of everyday dither, emotional ballast even. For instance, when supervisors are actively safety managing, hotel workers perceive that they are more likely to comply with safety rules and practices and modify their behaviors [10]. Similarly, previous research during the pandemic found that hotel safety leadership had a significant effect on employees' safety behavior, through belief restoration as a mediator [17]. Employees were more inclined to act heroically and help when they perceived that their leader was able to handle the risk to safety. This shows that safety leadership is working through direct effects and by way of psychological trust in high-crisis conditions. Another research also reported the significant relationship between perceived leadership care and voluntary safety participation, as well as unsafe acts at work [9].

While this empirical evidence is strong, some researchers have argued that the causal relationship between these two variables is not so clear-cut in all conditions. For instance, under conditions of sustained uncertainty, such as prolonged crises or twin-hazard scenarios, employees may face competing cognitive demands [11]. Such pressures might decrease focus on leader cues or obscure the specificity of those cues. When crises are protracted or complex, trust in leadership may erode, requiring further psychological bolstering before behavioral change can occur. The majority of empirical studies in this field have been conducted in relatively stable or single-crisis-pair settings, and there has been much less investigation into whether the direct leadership-behavior pathway applies to multi-crisis settings.

Nevertheless, due to its sound theoretical basis and broad cross-industry support, it is theoretically and empirically sound to examine this association. In particular, in a tourism impacted by several linked disruptions such as the interaction between earthquakes, volcanic eruptions, risk to infrastructure, and repeat climate change ambiguity then the presence and trust associated with safety leadership may still be a key influence on frontliner behavior. Safety-focused leadership behaviors, which role-model, sanction, and priorities safety, can be assumed to positively affect employees' compliance, participation, and adaptability.

- H1: Safety leadership has a positive impact on employee safety behavior.

2. BELIEF RESTORATION AS A MEDIATING MECHANISM

In this study, belief restoration refers to employees' renewed confidence in their organization's capability and willingness to manage safety risks following repeated disruptions. Unlike general organizational trust or safety climate, belief restoration reflects a context-specific cognitive reassessment that occurs after employee's experience uncertainty, disruption, or perceived organizational vulnerability. This concept is particularly relevant in environments characterized by prolonged and overlapping crises, where employees may repeatedly evaluate whether their organization remains capable of maintaining safety and operational stability [17, 43]. It is also distinct from psychological safety, which primarily concerns employees' willingness to take interpersonal risks, such as speaking up or expressing concerns within the work unit. By contrast, belief restoration concerns employees' renewed confidence that the organization remains capable of managing safety threats and protecting them under conditions of disruption [17, 43].

In this study, belief restoration was examined as a mediator because it reflects a crisis-driven psychological recovery process that is highly sensitive to a multi-crisis environment experienced by frontline hospitality staff. In contrast to general trust and safety climate, belief restoration reflects the dynamic process of how employees reassess the organizational capacity for safety after a disruption. It is thus particularly pertinent in an extensive crisis, as confidence needs to be restored over and over again and not only preserved [17, 43]. In extended, cascading disruptions, workers may follow safety protocols in the here and now even while wondering if their

employer can continue to keep them safe as events unfold. Safety leadership behaviors (for example, clear communication, visible role modelling, and resource support) matter not just because of their exhortatory value but because they are indicative of the possibility (not yet lost) that safety can be exercised and managed. Belief restoration captures this regained confidence in organizational safety capability, thus doing so more proximally than broader constructs such as general trust or organizational support [10, 17]. For this reason, belief restoration captures a more dynamic and situational psychological process than broader constructs such as general trust or organizational support, as it specifically reflects employees' renewed belief that their organization can effectively manage safety threats under crisis conditions [10, 17].

Without belief restoration, leadership actions risk being interpreted as symbolic or performative, limiting their capacity to motivate genuine safety engagement under sustained uncertainty, which is consistent with evidence that the influence of safety leadership on safety behavior becomes weaker when employees' belief restoration is low. This psychological aspect is especially vital for frontline service workers, who face infrastructure vulnerabilities, unpredictable guest behavior, and weather-related disruptions at work, often without a timely or complete set of procedural instructions [37, 44]. Although safety leadership effects may not always lead to direct behavior change in the face of residual crisis, indirect effects via belief restoration are theoretically and empirically attractive. Management work practices, such as communicating a safety vision, training employees, demonstrating concern for their safety, and allocating resources to this end, are likely to be effective only to the degree that they lead workers to become confident (or trust) that the organization has once again developed safe capabilities. Thus, belief restoration serves as a psychological 'gateway', by converting observable leadership behaviors into internal inspiration and safety involvement [17].

The mediating role of belief restoration can be understood primarily through SET, which suggests that employees tend to reciprocate supportive leadership behaviors with positive work-related responses. When leaders demonstrate competence, concern, and commitment to employee safety during uncertain situations, employees may interpret these actions as signals of organizational support and protection. This interpretation can restore employees' confidence in the organization's ability to manage safety risks, which in turn encourages compliance, participation, and adaptive safety behaviors [8, 9]. However, in high-crisis contexts the staff may not participate in such a quid pro quo unless they believe there is real and effective leadership at play. Transactional Stress Theory also explains that the response of employees to such a crisis may be determined by their perception of controllability, predictability and treatability of the threat. BR enhances these appraisals in an enabling employee to respond decisively and avoid emotional distress during periods of uncertainty [45].

Recent empirical evidence also offers support for this mediating mechanism found that during the COVID-19 epidemic, rather than exerting a direct impact, safety leadership influenced hotel employee safety behaviors through restoring beliefs [17]. Another recent study found that employees are inclined to engage in safety behavior if they believe that the leader has sufficient competence in hazard management [43]. Furthermore, employees' trust in their company to comply with safety regulations increases adaptive engagement during tourism crises [46]. Despite the growing focus on this mediating function, belief restoration remains unattended to within hospitality contexts suffering from prolonged and multi-leveled crises. Previous studies tend to concentrate on the short-term disruption resulting from individual events, including natural disasters and disease outbreaks. But the risk profile in hospitality is becoming increasingly intricate, among which the subject of climate variability and pressure on infrastructure and operation is not limited [1, 11]. In the presence of such persistence, the influence of leadership cues may be mitigated by emotional exhaustion and cynicism. In this way, belief restoration could be the underlying psychological state that enables safety leadership to still have an impact with increasing levels of uncertainty.

Consequently, this study posits that belief restoration reveals the link between safety leadership and employee safety behavior. In order for leaders to be effective their leadership must not only be seen but also perceived by employees as credible and competent. By means of belief restoration, safety leadership may be able to create the psychological readiness in terms of safety compliance, participation and adaptability. Therefore, safety leadership may not always influence employee safety behavior directly in prolonged crisis contexts. Instead, leadership actions may first need to restore employees' confidence in the organization's safety capability before behavioral responses emerge.

- H2: Belief restoration mediates the relationship between safety leadership and employee safety behavior.

3. PERCEIVED SUSCEPTIBILITY AS A MODERATOR OF THE DIRECT EFFECT

In high-exposure sectors such as tourism and hospitality, individuals' perceptions of their personal vulnerability to harm will strongly influence their responses to leadership. Within the Health Belief Model, perceived susceptibility represents a key cognitive appraisal shaping how individuals interpret and respond to potential threats [12]. Perceived susceptibility refers to the belief that one is vulnerable to a health threat (for example, respiratory illness, physical injury, or psychological distress) [13]. Reducing exposure in this way is especially challenging in complex crisis situations where staff must tackle multiple threats simultaneously, such as earthquakes and eruptions, infrastructure breakdowns and cyclical climate-related dislocations. It may influence how workers process, attend to and respond to safety leadership messages.

The most commonly applied safety leadership models, in both safety studies and those within the industry domain, primarily draw upon the perspective of formal authority with an emphasis on modelling desired manager behavior and communication [8, 33]. The crisis psychology literature and studies of occupational safety find that when people believe they are at risk, it can make them more cognitively attuned to signals from outside authorities, especially if those authorities seem legitimate. Consistent with social-cognitive models, an overall perception of more risk can be expected to make people pay more attention to signals of leader fundamentalism. and seek guidance regarding how one should behave, think, feel or respond in the face of ambiguity [47]. In this way, perceived susceptibility to the disease may be a motivational multiplier that amplifies the impact of leadership communication on action.

This mechanism is especially pertinent in-service areas characterized by high ambiguity, urgency, and personal risk. They do not process leadership cues such as demonstrating safety compliance, expressing hazard awareness or reinforcing safety norms in isolation. Rather, they are distilled through the lens of workers' self-reported risk exposure. Perceived susceptibility may make employees perceive leadership actions not only as administrative formalities but instead as protective means in practice, so they are more likely to be receptive and responsive in action. Employees with lower risk perceptions, however, may discount or not pay attention to such warning signals if the threats are perceived as less salient.

Empirical studies support this interaction. A relationship between perceived susceptibility and leadership communication in behavioral intentions toward public safety social marketing programs, such that higher perceived susceptibility was associated with greater message compliance [12]. In occupational contexts, the positive impact of safety leadership on employee safety participation was heightened when perceived risk was elevated [14]. These results pertain to the role that perceived susceptibility plays in increasing alertness and involvement, particularly when such activation of leadership is visible or credible. However, the literature remains scarce in multi-crisis homeland hospitality settings. Prior work has generally considered one-crisis-at-a-time situations or sectors in which risks are static and well understood. Tourism workers, on the other hand, must manoeuvre in a more fluid reality in which leadership legitimacy and employees' perceptions of their vulnerability change over time. With these interactions, it is also necessary to investigate, in greater situational specificity, how the perception of risk amplifies or diminishes the effectiveness of leadership. Accordingly, this study hypothesizes that perceived susceptibility moderates the direct relationship between safety leadership and employee safety behavior. Specifically, it is proposed that safety leadership will have a stronger positive effect on safety behavior when employees perceive themselves as more vulnerable to environmental and occupational risks.

- H3: Perceived susceptibility positively moderates the direct relationship between hotel safety leadership and safety behaviors in multi-crisis environments.

4. PERCEIVED SUSCEPTIBILITY AS A MODERATOR OF THE MEDIATED EFFECT

Perceived susceptibility, one of the core components of the HBM, is defined as an individual's belief in their personal risk of experiencing harm or unpleasant consequences [12]. In these multi-crisis hospitality contexts, this involves not only risks of physical harm from natural causes or system failure, but also psychological and occupational dangers such as health issues and insecure employment [44, 48]. Such threats may have a substantial impact on employees' cognitive and affective reactions to safety-focused leader behaviors.

This approach is based on the idea of perceived high vulnerability as a potential source for motivating people to engage in preventive actions HBM. This would lead to the supposition that susceptibility will enhance the effect of safety-promoting leadership communication. However, the stress and coping theory [49] has an important qualification to this emphasis on risk perception that when risk is perceived as high but uncontrollable psychological stress may lead to emotional exhaustion resulting in a narrowing of attentional resources and disengagement from organizational communication messages [8]. In such contexts, efforts to lead may have little impact on behaviors until workers feel assured once again of their organization's safety capability.

In a multi-crisis context, where employees are very risk-oriented, they will not respond to the leadership cues without this having restored confidence in the organization's ability to ensure safety. This is in the line of health behaviors theory, implying that perceived susceptibility will increase attention towards threat information but did not consistently lead to protective behaviors when an individual doubted the manageable attributes of the threat can be controlled [12, 45]. As such, and consistent with being an antecedent condition, belief restoration is not only a mediating pathway but also a conditional one which accounts for why safety leadership becomes behaviorally effective when the context of risk remains high mirroring findings in hospitality where the effect of leadership on safety behaviors occurs mostly through belief restoration rather than as a sole direct effect [17].

These dynamic places the topic of belief restoration (for example, employees restoring faith in their organization's ability to manage risk) as a key mediating concept that might be modulated via perceived susceptibility. More importantly, in particular given high susceptibility, is the potential psychological value of belief restoration as a buffer to carry employees through in making sense of leadership messages and translating them into behaviors. If workers believe they are at risk, they will be more likely to heed the guidance of their leaders when signals provide substance that suggests an organization is safe. Susceptibility is low: with low susceptibility, employees need less reinforcement of belief until they act, because they are already mentally safe. There is partial support for this mechanism in empirical studies. For instance, in the context of COVID-19, belief restoration mediated the effect of hotel safety leadership on employee behaviors [17]. Nonetheless, their study did not consider whether this model differs by perceived susceptibility. Risk perception may moderate the influence of health leadership on attitudes and behavioral responses [12, 45]. The leadership effect depends on context but did not examine conditional indirect effects [14].

Although this interest is growing, how perceived susceptibility moderates the mediating effect of belief restoration on behaviors (a process known as moderated mediation) is often overlooked. This is a crucial gap in the context of multi-crisis hospitality. Long-term or compounded crises can erode employees' trust and exacerbate the psychological toll, making belief restoration both more challenging and more crucial. Leadership that restores belief may be particularly effective among employees who are relatively high in this need, given that they may feel most at risk and therefore more motivated to seek reassurance and stability. Based on these considerations, this study hypothesizes that perceived susceptibility moderates the indirect effect of safety leadership on employee safety behaviors through belief restoration. Specifically, the mediated effect of belief restoration is expected to be stronger for employees with high perceived susceptibility. In this study, this conditional indirect relationship is theorized as a structural pattern consistent with the proposed process, rather than as definitive evidence of a causal psychological sequence, given the cross-sectional nature of the data.

- H4: Perceived Susceptibility positively moderates the indirect relationship between safety leadership and employee safety behavior via belief restoration, such that the indirect effect is stronger when Perceived Susceptibility is high.

  Based on the hypothesis, the model of this study is illustrated in Figure 2 as follows:

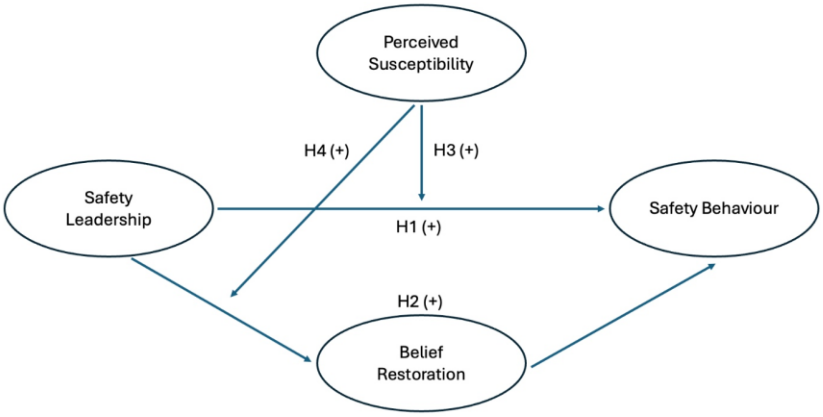

FIGURE 2. Research model.

III. MATERIAL AND METHOD

1. *RESEARCH DESIGN*

This study adopts a quantitative cross-sectional survey design to examine the relationships among safety leadership, belief restoration, perceived susceptibility, and employee safety behaviors in multi-crisis hospitality environments. The cross-sectional design allows the study to capture employees' perceptions of leadership signals, cognitive responses, and safety-related behaviors within a real organizational setting experiencing recurring operational uncertainty. Although the proposed model reflects a theoretically ordered process linking leadership signals, cognitive reassessment, and behavioral engagement, the analysis focuses on structural associations among the variables rather than establishing definitive causal relationships.

Given the complexity of the proposed model, which includes mediating and moderating effects as well as second-order constructs, Partial Least Squares Structural Equation Modelling (PLS-SEM) was selected as the main analytical method. PLS-SEM is particularly suitable for predictive modelling and theory testing in situations involving relatively limited sample sizes, non-normal data structures, or hierarchical constructs [50, 51]. In addition, the use of SmartPLS version 4.1.1 enabled bootstrapping analysis, bias-corrected confidence intervals (CIs), and higher-order modelling, thereby ensuring robust testing of the hypothesized relationships.

2. *SAMPLING AND PARTICIPANTS*

The study was conducted in the tourism and hospitality sector in Yogyakarta, Indonesia. Yogyakarta is one of the country's major tourism destinations and is located in a region exposed to recurring environmental hazards, including volcanic activity from Mount Merapi, earthquakes, extreme rainfall, and infrastructure disruptions. Although large-scale disasters do not occur continuously, the persistence of these environmental risks creates a context in which tourism organizations must operate under conditions of ongoing uncertainty and potential disruption. This setting provides a relevant empirical context for examining safety leadership processes in what can be described as a multi-crisis hospitality environment, where employees may repeatedly reassess organizational safety capability and risk management effectiveness. A purposive sampling method was adopted to target full-time workers who were directly engaged in daily operations and had prior experience with crisis-related disruptions. The aim was to ensure that participants could meaningfully report their perceptions of leadership behaviors, perceived safety risk and their own adaptive practices. In total, 106 usable responses were obtained, exceeding the minimum sample size recommended for PLS-SEM models with two predictors per construct and moderate effect sizes [51]. This sample size ensured sufficient statistical power

to test both main and interaction effects. According to commonly applied PLS-SEM guidelines, models with a limited number of predictors per construct can be reliably estimated with samples of approximately 100 observations, particularly when bootstrapping procedures are employed to assess parameter stability [50, 51].

3. DATA COLLECTION PROCEDURE

The questionnaire was administered using Google Forms. Respondents were recruited through internal hotel HR communication channels. Participation was voluntary and anonymous, and electronic informed consent was obtained prior to completing the survey. Participants completed the questionnaire during their free time, and the survey remained open for approximately two weeks. To minimize common method bias, questionnaire items were carefully worded to avoid redundancy and ambiguous phrasing. Questionnaires were distributed through on-site coordination with hotel management and supervisors.

4. MEASUREMENT AND INSTRUMENTATION

All measurement items were adapted from previously validated scales in the safety and organizational behaviors literature. Minor wording adjustments were made to ensure relevance to the hospitality context. All items were measured using a five-point Likert scale ranging from strongly disagree to strongly agree. Items were translated into Bahasa Indonesia and then back-translated to maintain content validity to ensure semantic equivalence. Answers were scored on a 5-point Likert scale (1 = strongly disagree and 5 = strongly agree).

Safety leadership was operationalized as a second-order reflective latent construct with four first-order facets: safety coaching, safety motivation, safety control, and safety care. These subdimensions were either adopted or modified from previous studies [52] and aligned with the safety leadership literature in hospitality [33, 34]. Four items were used to capture leaders' support for promoting, enforcing, and valuing safe work practices. Four items were used to assess the leadership dimension of leaders' support for promoting, enforcing, and valuing safe practices

The second-order, reflective nature of employee safety behaviors was also conceptualized by linking safety compliance, safety participation, and safety adaptability. Scales of compliance and participation are based on safety adaptability and are adopted from the recent frontiers of safety climate literature [53] as sub-facets like employees' adaptation and improvisation in uncertain circumstances [38, 39] reflecting employee flexibility and improvisation in uncertain contexts. Belief restoration was assessed using four items [17], capturing employees perceived confidence in the organization's ability and willingness to manage ongoing safety threats during crisis conditions. Items focused on organizational preparedness, competence, and responsiveness. Perceived susceptibility was assessed using a 5-item scale based on the health belief model and modified from the workplace [12, 45]. These items captured employees' subjective perceptions of their exposure to environmental risks, such as physical harm, infrastructure breakdowns, or job-related effects of climate-related crises.

5. DATA ANALYSIS

PLS-SEM was chosen for several reasons. First, the study examines a structural model involving both mediation and moderated relationships, which makes variance-based SEM suitable for analyzing complex predictive models. Second, PLS-SEM is appropriate for exploratory contexts where theoretical development is still evolving. Third, the method performs well with relatively modest sample sizes while maintaining stable parameter estimation [51].

Following recommended procedures, the analysis was conducted in two stages [51]. The measurement model was first assessed to evaluate the reliability and validity of the constructs. Subsequently, the structural model was examined to test the hypothesized relationships among safety leadership, belief restoration, perceived susceptibility, and employee safety behaviors. Data were analyzed using SmartPLS following the two-step PLS-SEM procedure recommended in prior research [51]. The first step tested the measurement model in order to explore for indicator reliability (outer loadings), internal consistency, convergent validity (AVE), as well as discriminant validity via Fornell–Larcker criterion and Heterotrait-Monotrait Ratio (HTMT). Multicollinearity was assessed using the VIF (Variance Inflation Factor).

After confirming the measurement model, structural model was tested. Bootstrapping was applied using 10,000 subsamples, with bias-corrected and accelerated (BCa) confidence intervals, to examine direct paths, mediation, and moderation effects. Explained variance was assessed using R^2. In addition to evaluating the measurement and structural models, several robustness checks were conducted, including multicollinearity diagnostics, Gaussian copula endogeneity testing, unobserved heterogeneity analysis using FIMIX-PLS, non-linear effects testing, and predictive relevance assessment using PLSpredict.

IV. DATA ANALYSIS

The present research adopted the embedded two-step procedure in PLS-SEM to test a hierarchical component model. Consistent with the within-individual two-step process [50]. Analysis was conducted in two major stages. Initially, the external measurement model was tested at the first- and second-order levels for reliability and validity. Second, the internal structural model was examined to assess direct, mediating, and moderating effects among the latent variables.

1. OUTER MODEL EVALUATION

1.1 First-Order Measurement Model

To assess convergent validity, Average Variance Extracted (AVE) was examined. Several items with suboptimal loadings-CCH1, MOT4, CARE5, COMP2, ADAP2, and BRO1-were removed to improve overall construct performance. After deletion, all AVE values exceeded the 0.50 threshold recommended by [50]. For instance, safety adaptation reported an AVE of 0.816, safety participation an AVE of 0.705, and safety control an AVE of 0.581 (see Table 2).

Table 2. First order outer model result.

Construct	Variable	Cronbach α	Rho_C	AVE	Outer Loading	VIF
Safety Leadership (Second-Order)						
Safety Coaching	CCH1	0.736	.812	0.683	removed	
	CCH2				.835	1.562
	CCH3				removed	
	CCH4				.817	1.397
Safety Control	CTRL1	.759	.847	.581	.748	1.474
	CTRL2				.760	1.687
	CTRL3				.742	1.909
	CTRL4				removed	
	CTRL5				.798	1.834
Safety Motivation	MOT1	.718	.842	.640	.831	1.416
	MOT2				.787	1.497
	MOT3				.780	1.346
	MOT4				removed	
Safety Care	CARE1	.845	.896	.683	.813	1.720
	CARE2				.856	2.292
	CARE3				.803	1.760
	CARE4				.832	2.098
	CARE5				removed	
Safety Behavior (Second Order)						
Safety Compliance	COMP1	.767	.856	.748	.896	1.559
	COMP2				removed	
	COMP3				.832	1.334
Safety Participation	PAR1	.790	.877	.705	.848	2.253

	PAR2				.862	1.910
	PAR3				.807	1.974
Safety Adaptation	ADAP1	.775	.899	.816	.908	1.666
	ADAP2					2.001
	ADAP3				.899	2.072
Perceived Susceptibility						
Perceived	SPCT1	.948	.966	.904	.966	4.370
Susceptibility	SPCT2				.951	4.875
	SPCT3				.934	4.397
Belief Restoration						
Belief Restoration	BR01	0.84	.906	.763		
	BR02				.896	2.325
	BR03				.851	1.818
	BR04				.873	2.114

Discriminant validity was assessed using both the Fornell-Larcker criterion and the HTMT ratio. As shown in Table 3, the square root of the AVE for each construct was greater than its inter-construct correlations. Additionally, as shown in Table 4 all HTMT values were below 0.90, confirming adequate discriminant validity between the first-order constructs [54].

Table 3. First order Fornell-Larcker criterion.

	BR	SPCT	ADAP	CARE	CCH	COMP	CTRL	MOT	PAR
BR	0.874								
SPCT	-0.014	0.951							
ADAP	0.613	0.201	0.903						
CARE	0.423	0.067	0.500	0.826					
CCH	0.429	0.054	0.291	0.386	0.826				
COMP	0.510	0.041	0.309	0.333	0.324	0.865			
CTRL	0.618	0.012	0.520	0.446	0.507	0.543	0.762		
MOT	0.439	0.027	0.384	0.416	0.420	0.495	0.615	0.800	
PAR	0.734	0.085	0.691	0.421	0.338	0.407	0.610	0.456	0.839

Table 4. First order HTMT ratio.

	BR	SPCT	ADAP	CARE	CCH	COMP	CTRL	MOT	PAR
BR									
SPCT	0.038								
ADAP	0.756	0.227							
CARE	0.494	0.086	0.611						
CCH	0.635	0.118	0.443	0.566					
COMP	0.677	0.068	0.417	0.448	0.525				
CTRL	0.775	0.080	0.677	0.548	0.791	0.762			
MOT	0.559	0.083	0.509	0.524	0.682	0.728	0.832		
PAR	0.899	0.106	0.881	0.507	0.515	0.549	0.790	0.604	

Internal consistency reliability was evaluated using both Cronbach's Alpha and Composite Reliability (Rho_C). All constructs exceeded the recommended threshold of 0.70. For example, safety coaching had Cronbach's alpha = 0.736 and rho_c = 0.812, safety control reported Cronbach's alpha = 0.759 and rho_c = 0.847,

and safety motivation exhibited Cronbach's alpha = 0.718 and rho_c = 0.842 (see Table 1). These results demonstrate that the first-order constructs are both reliable and conceptually valid.

1.2 Second-Order Measurement Model

The second-order constructs, safety leadership and employee safety behaviors, were modelled as reflective higher-order constructs, following the embedded two-step approach [55]. Convergent validity was confirmed, as all AVE values exceeded the 0.50 cutoff. As shown in Table 5, Safety Leadership had an AVE of 0.705, and safety behaviors exhibited an AVE of 0.855. Similarly, Belief Restoration and Perceived Susceptibility achieved AVEs of 0.763 and 0.904, respectively, indicating strong shared variance among their indicators.

Table 5. Convergent validity second order result.

Construct	Variable	Cronbach α	Rho_C	AVE	Outer Loading	VIF
Safety Leadership	CCH	.792	.877	.705	.780	1.589
	CTRL				.912	2.003
	CARE				.846	1.334
Safety Behavior	MOT	.830	.840	.855	.821	1.654
	ADAP				.914	2.017
	COMP				.906	2.253
	PAR				.934	2.017
Perceived Susceptibility	SPCT1	.948	.966	.904	.966	4.370
	SPCT2				.951	4.875
	SPCT3				.934	4.397
Belief Restoration	BR02	.845	906	.763	.896	2.325
	BR03				.851	1.818
	BR04				.873	2.114

Discriminant validity was again evaluated using both the Fornell-Larcker criterion and HTMT ratios. Results in Table 6 indicate that the square root of each AVE was greater than its corresponding latent correlations. As shown in Table 7, HTMT values remained below the conservative threshold of 0.90. For example, the HTMT between safety leadership and safety behaviors was 0.683, and between Belief restoration and safety behaviors it was 0.869, both within acceptable limits.

Table 6. Second order Fornell-Larcker criterion.

	BR	SPCT	SBHVR	SLEAD
BR	0.874			
SPCT	-0.011	0.949		
SBHVR	0.732	0.165	0.924	
SLEAD	0.601	0.036	0.578	0.839

Table 7. Second order HTMT ratio.

	BR	SPCT	SBHVR	SLEAD	SPCT x SLEAD
BR					
SPCT	0.038				
SBHVR	0.869	0.177			
SLEAD	0.716	0.077	0.683		
SPCT x SLEAD	0.113	0.181	0.042	0.148	

Internal consistency reliability was satisfactory across all second-order constructs (see Table 5). As detailed in Table 5. Safety Leadership showed Cronbach's alpha = 0.792 and Rho_C = 0.877, while Employee Safety behaviors had Cronbach's alpha = 0.830 and Rho_C = 0.840. Perceived Susceptibility demonstrated exceptional reliability with Cronbach's alpha = 0.948 and Rho_C = 0.966, and Belief Restoration also performed strongly (Cronbach's alpha = 0.845, Rho_C = 0.906).

2. INNER MODEL EVALUATION

To test the hypothesized relationships, bootstrapping with 10,000 resamples was applied, using Bias-Corrected and Accelerated (BCa) confidence intervals, which offer more accurate confidence bounds in PLS-SEM analysis [51].

Table 8. Hypothesized relationship.

Hyp.	Structural Path / Effect	β (Path Coef.)	t-Statistic	p-Value	Significance (p < .05)	Supported?
H1	Safety Leadership → Safety Behavior	0.189	1.861	0.063	✗	No
H2	Safety Leadership → Belief Restoration → Safety Behavior	0.391	4.815	0.000	✓	Yes, Full Mediation
H3	Safety Leadership × Perceived Susceptibility → Safety Behavior	–0.064	0.609	0.543	✗	No
H4a	Safety Leadership × Perceived Susceptibility → Belief Restoration	0.212	1.969	0.049	✓	Yes
H4b	Safety Leadership × Perceived Susceptibility → Belief Restoration → Safety Behavior	0.133	1.917	0.055	✗ (Marginal)	Partial

2.1 Direct Effects

Contrary to the hypothesized relationship, Safety Leadership did not significantly predict safety behaviors directly (B = 0.189, p = 0.063). As the p-value exceeded the 5% significance threshold, H1 was rejected, suggesting that leadership signals alone may not suffice to drive frontline safety behaviors in multi-crisis environments without psychological mediators.

2.2 Mediation Effects

Hypothesis 2 tested the mediating effect of belief restoration in the relationship between safety leadership and employee safety behaviors. The results provided strong support for mediation. The indirect effect of safety leadership on safety behaviors through belief restoration was statistically significant, with a path coefficient of B = 0.391, a t-value of 4.815, and a p-value of 0.000, based on bootstrapping with 10,000 subsamples and BCa confidence intervals (see Table 7). Additionally, the direct path from safety leadership to safety behaviors was not statistically significant (B = 0.189, p = 0.063). These combined results meet the criteria for full mediation [56], indicating that the effect of safety leadership on safety behaviors operates primarily through belief restoration. Therefore, the result supports the statistical acceptance of H2.

2.3 Moderation and Moderated Mediation

Hypothesis 3 posited that perceived susceptibility moderates the direct relationship between safety leadership and employee safety behavior. The moderation term (Safety Leadership × Perceived Susceptibility) was not statistically significant. The path coefficient was β = –0.064, with a t-statistic of 0.609 and p-value of 0.543 (see Table 7). As the p-value exceeds the 5% significance level, H3 is rejected. This result indicates that perceived susceptibility does not significantly alter the direct influence of safety leadership on safety behaviors in the examined context.

The conditional indirect effect of safety leadership on safety behaviors using belief restoration, moderated by Perceived Susceptibility, was marginally significant, with a path coefficient of β = 0.133, a t-statistic of 1.917, and a p-value of 0.055. Although this result falls slightly above the 0.05 threshold, it suggests limited but

observable evidence of a conditional indirect effect, in line with established thresholds for bootstrapped moderated mediation analysis [56]. As such, H4 is interpreted as receiving marginal statistical support.

2.4 Model Quality and Predictive Power

Goodness-of-fit of the model was measured using R^2. Regarding the endogenous variables, belief restoration accounted for 0.395 of the variances, and safety behaviors accounted for 0.595. According to the guideline in [51], the model explains a large proportion of the variance in employee safety behaviors outcomes in multi-crisis hospitality contexts. To evaluate predictive relevance, the Stone–Geisser Q^2 statistic was computed using the blindfolding procedure. Q^2 values were 0.351 for belief restoration and 0.270 for safety behaviors. As both exceed the minimum threshold of 0.00 [51]. The results confirm that the model demonstrates acceptable out-of-sample predictive relevance.

The effect of safety leadership on belief restoration showed a large effect size (f2 = 0.635), and the effect of Belief Restoration on Safety Behavior was similarly large (f2 = 0.584), indicating substantial influence of these paths on their respective dependent variables. In contrast, the direct effect of Safety Leadership on Safety Behavior was small (f2 = 0.053), consistent with the non-significant statistical result. The interaction effect between Safety Leadership and Perceived Susceptibility on Belief Restoration also had a small effect (f2 = 0.055), suggesting limited but observable moderation influence. The direct moderation of Safety Leadership × Perceived Susceptibility on Safety Behavior and the conditional indirect (moderated mediation) effect, did not yield interpretable f2 values but were included in the hypothesis-testing results. These interpretations of effect sizes follow the threshold reported in [57], supporting the model's central mediating mechanism while highlighting the weaker moderating components. Model fit was assessed using the Standardized Root Mean Square Residual (SRMR). The SRMR for both the saturated and estimated models was 0.069, well below the 0.08 threshold for good model fit [51], indicating that the proposed model accurately represents the observed data structure.

3. ROBUSTNESS CHECK

To ensure that the structural results are not driven by statistical artefacts, several robustness checks were conducted following recommended practices in PLS-SEM analysis [58, 59]. First, multicollinearity diagnostics were examined using variance inflation factor (VIF) statistics. All VIF values were well below the recommended threshold of 5, indicating that multicollinearity does not pose a concern for the estimated structural relationships [58]. Second, potential endogeneity was assessed using the Gaussian copula approach. The results show that none of the copula terms were statistically significant at the 5% level, suggesting that the estimated relationships are unlikely to be biased by endogeneity. Third, unobserved heterogeneity was examined using finite mixture PLS (FIMIX-PLS). The information criteria (AIC, BIC, and CAIC) consistently supported a one-segment solution, while the entropy statistic indicated weak segment separation. These results suggest that the pooled sample estimation is appropriate and that the structural relationships are not driven by latent sample heterogeneity. Fourth, potential non-linear effects were assessed by including quadratic terms in the structural model. None of the quadratic terms were statistically significant, supporting the linear specification of the hypothesized relationships. Finally, the out-of-sample predictive performance of the model was evaluated using PLSpredict. See Table 9.

3.1 Multicollinearity Assessment

To ensure that the estimated coefficients are not distorted by excessive overlap among indicators and dimensions, we assessed multicollinearity using the Variance Inflation Factor (VIF). Following common diagnostic thresholds in PLS-SEM, VIF values above 5 may indicate problematic collinearity that could inflate standard errors and destabilize parameter estimates.

Across both the first-order outer model (Table 1) and the second-order measurement model (Table 4), all reported VIF values are below 5, indicating no evidence of problematic multicollinearity. In the second-order model (Table 4), VIF values range from 1.334 to 4.875 which below the cut-off. Similarly, in the first-order model (Table 1), the VIF values for retained indicators across safety leadership and safety behavior dimensions also

remain well below 5. Taken together, these results suggest that collinearity is unlikely to bias the measurement model estimates or compromise the stability of the structural model inferences.

3.2 Out-Of-Sample Predictive Assessment

To complement the in-sample explanatory evaluation and to examine whether the model yields predictive relevance for observations not used in parameter estimation, we assessed out-of-sample predictive performance using PLSpredict [58]. Following recommended reporting practice, we first inspected Q^2_predict values to confirm that the model's predictions outperform a naïve benchmark (i.e., Q^2_predict > 0 indicates predictive relevance). We then compared prediction errors (RMSE and MAE) from the PLS-SEM model against two benchmarks: a linear model (LM) and an indicator average (IA) benchmark. Lower prediction errors for PLS-SEM relative to these benchmarks indicate superior predictive performance.

Table 9. PLS predict results.

Indicator	Q^2 predict	PLS-SEM RMSE	PLS-SEM MAE	LM RMSE	LM MAE	IA RMSE	IA MAE
RESTORE01	0.104	0.551	0.292	0.558	0.297	0.582	0.346
RESTORE02	0.267	0.414	0.296	0.425	0.301	0.483	0.395
RESTORE03	0.296	0.476	0.351	0.483	0.357	0.591	0.496
RESTORE04	0.241	0.589	0.412	0.594	0.419	0.688	0.544
SADAPT01	0.249	0.763	0.610	0.784	0.619	0.880	0.725
SADAPT02	0.189	0.860	0.650	0.905	0.669	0.955	0.737
SADAPT03	0.117	0.873	0.688	0.880	0.694	0.940	0.733
SCOMP01	0.204	0.482	0.320	0.492	0.327	0.541	0.406
SCOMP02	0.147	0.367	0.235	0.387	0.244	0.397	0.277
SCOMP03	0.212	0.426	0.302	0.447	0.314	0.479	0.387
SPAR01	0.236	0.772	0.504	0.787	0.515	0.884	0.670
SPAR02	0.117	0.766	0.516	0.782	0.552	0.815	0.620
SPAR03	0.305	0.516	0.402	0.520	0.404	0.619	0.536

All indicators exhibit positive Q^2_predict values (0.104–0.305), supporting out-of-sample predictive relevance for both belief restoration and safety behaviors indicators. Moreover, the prediction error comparisons consistently favor the PLS-SEM model. For every indicator, PLS-SEM yields lower RMSE and MAE than the linear model benchmark (LM) and the indicator-average benchmark (IA).

3.3 Linearity / Non-Linear Effects Assessment

To ensure that the key structural relationships are not driven by functional-form misspecification, we assessed potential nonlinearity by testing quadratic terms in the focal structural paths. This diagnostic evaluates whether curvature (rather than linear effects) explains the relationships among the latent constructs. None of the tested quadratic effects is statistically significant (p = 0.341–0.742), indicating no detectable curvature in these focal structural relations. Accordingly, the evidence supports the use of a linear specification for the key paths examined, reducing concerns that the substantive conclusions are artefacts of non-linear misspecification.

Table 10. Linearity/non-linear test.

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Conclusion
QE (Belief Restoration) -> Safety Behavior	-0.076	-0.063	0.080	0.952	0.341	Linear

QE (Safety Leadership) -> Belief Restoration	-0.051	-0.065	0.058	0.887	0.375	Linear
QE (Safety Leadership) -> Safety Behavior	0.015	0.011	0.047	0.329	0.742	Linear

3.4 Endogeneity Assessment

To ensure that the key structural relationships are not biased by endogeneity, we assessed potential endogeneity using a Gaussian copula approach. The results indicate no evidence of endogeneity at the 0.05 significance level, supporting the validity of the reported structural estimates.

Table 11. Endogeneity test results.

Test path	Original sample (O)	Sample mean (M)	STDEV	T statistics (|O/STDEV|)	P values	Conclusion
GC (Belief Restoration → Safety Behavior) → Safety Behavior	-0.290	-0.254	0.202	1.434	0.151	Non-Endogeneity
GC (Safety Leadership → Belief Restoration) → Belief Restoration	-0.326	-0.338	0.173	1.889	0.059	Non-Endogeneity
GC (Safety Leadership → Safety Behavior) → Safety Behavior	-0.054	-0.045	0.139	0.386	0.700	Non-Endogeneity

All Gaussian copula terms are statistically non-significant at $\alpha = 0.05$, indicating no evidence of endogeneity in the tested structural relations. One copula term is marginal (p = 0.059 for the Safety Leadership → Belief Restoration relation); therefore, while the diagnostic does not suggest endogeneity under conventional thresholds, this linkage is interpreted conservatively. Overall, the endogeneity assessment reduces concern that the focal path estimates are primarily driven by omitted-variable bias or simultaneity

3.5 Unobserved Heterogeneity

To ensure that the key structural relationships are not driven by unobserved subgroup structures (i.e., latent segments) that could bias pooled estimates, we assessed potential unobserved heterogeneity using FIMIX procedures in SmartPLS and evaluated segment solutions using information criteria and classification-quality indices. The results indicate weak segment separation, supporting the use of pooled-sample estimation for the primary model.

Table 12. Unobserved heterogeneity.

	1 segment	2 segment
AIC (Akaike's information criterion)	335.486	429.889
AIC3 (modified AIC with Factor 3)	354.486	438.889
AIC4 (modified AIC with Factor 4)	373.486	447.889
BIC (Bayesian information criterion)	385.911	453.775
CAIC (consistent AIC)	404.911	462.775
HQ (Hannan-Quinn criterion)	355.920	439.568
MDL5 (minimum description length with factor 5)	739.612	621.317
LnL (LogLikelihood)	-148.743	-205.945
EN (normed entropy statistic)	0.000	0.396
NFI (non-fuzzy index)	0.000	0.423
NEC (normalized entropy criterion)	0.000	3.933

Across several information criteria (AIC, BIC, CAIC, HQ), the one-segment solution yields smaller values than the two-segment solution, which typically supports a single-segment representation. Importantly, the segmentation quality diagnostics for the two-segment solution indicate weak separation: the normed entropy statistic is EN = 0.396, which is below the cut-off of 0.50, suggesting inadequate classification quality and limited evidence for meaningful unobserved heterogeneity. Likewise, the non-fuzzy index (NFI = 0.423) is also below desirable levels, reinforcing the conclusion that the two-segment solution is not well-defined. Therefore, we retain the pooled-sample estimation as the primary model and treat latent segmentation as not supported in this dataset. Future studies with larger samples may re-examine heterogeneity using richer segmentation variables.

4. DISCUSSION

This paper provides new insights into the relationship between safety leadership and employees' safety behaviors in multi-crisis hospitality settings. The findings indicate that safety leadership does not have a significant direct impact on safety behaviors but instead operates through the mediating role of belief restoration. In addition, perceived susceptibility significantly moderates the relationship between safety leadership and belief restoration, but not the direct relationship between leadership and behaviors. Taken together, these results provide both theoretical and practical insights into the role of psychological processes and contextual conditions in shaping safety behaviors during prolonged and overlapping crises.

The absence of a significant direct relationship between safety leadership and safety behaviors, combined with the significant indirect effect through belief restoration, suggests that leadership influence operates primarily through a psychological mechanism rather than through direct behavioral compliance. In other words, leadership actions alone may not immediately translate into observable safety behaviors in complex and uncertain environments. Instead, employees appear to first reassess the credibility of the organization's safety capability before translating leadership signals into behavioral responses. This pattern reflects what mediation literature describes as an indirect-only or full mediation relationship, where the influence of the predictor on the outcome is transmitted primarily through the mediating mechanism. In the context of multi-crisis hospitality settings, belief restoration therefore functions as the key psychological pathway through which safety leadership becomes behaviorally meaningful.

The fully mediated relationship observed in this study is consistent with the signaling perspective embedded in Social Exchange Theory [27, 60]. Within this framework, leadership behaviors such as coaching, care, and control can be interpreted by employees as signals of organizational support and concern. In multi-crisis environments, where frontline employees may feel surrounded by uncertainty and exposed to multiple overlapping risks, such leadership signals may first need to restore employees' confidence in the organization's capacity to manage safety threats before employees feel secure enough to engage in safe behaviors. In this context, belief restoration functions as a cognitive and emotional reset that enables employees to realign their behaviors with organizational safety expectations. This interpretation is also consistent with the Theory of Planned Behavior (TPB), which suggests that belief restoration may strengthen perceived behavioral control and normative support, thereby encouraging stronger safety intentions and behaviors [61, 62].

The interpretation of the results is also consistent with Self-Determination Theory (SDT). Safety behaviors that involve adaptability and active participation, particularly in unpredictable environments, are unlikely to emerge solely from rule compliance but require internal motivation and confidence in organizational support [62]. Such psychological states are not created merely through rules or monitoring, but through credible role modelling and communication of care, which help rebuild employees' confidence in organizational safety capability. The strong relationship between belief restoration and safety behaviors suggests that this internalized confidence becomes a prerequisite for safety engagement, especially in tasks that require discretion and flexibility [43, 17].

Perceived susceptibility further shapes how leadership signals are interpreted. According to the Health Belief Model (HBM), perceived susceptibility reflects an individual's belief about their vulnerability to potential threats [12]. In the present study, perceived susceptibility does not strengthen the direct influence of safety leadership on behaviors but reinforces the influence of leadership on belief restoration. In other words, perceived susceptibility functions as a psychological filter that increases employees' sensitivity to leadership

cues and strengthens the process through which belief restoration occurs when leadership actions are perceived as credible [63]. At the same time, perceived susceptibility alone does not necessarily lead to behavioral change unless employees also believe that the organization has the capability to manage the risks they face. This pattern is also consistent with stress and coping perspectives suggesting that threat perceptions may either enhance or overload attention depending on whether organizational signals are perceived as credible and sufficient [49].

The multidimensional nature of the constructs used in this study may also help explain the absence of a direct relationship between leadership and behaviors. Safety leadership in this study comprised several dimensions, including control, care, motivation, and coaching, each of which may influence different psychological responses [34]. Similarly, employee safety behaviors were conceptualized as a multidimensional construct consisting of compliance, participation, and adaptability. In particular, safety adaptability is less likely to respond to hierarchical direction and is more likely to emerge when employees feel supported and empowered to respond to emerging risks [44]. In this sense, belief restoration functions as a bridging mechanism that connects diverse leadership behaviors with complex behavioral outcomes, reinforcing its central role in safety performance during prolonged crises.

This study, therefore, provides a more refined understanding of safety leadership in turbulent and uncertain environments. The findings support a fully mediated relationship through belief restoration, suggesting that the influence of safety leadership on safety behaviors may operate primarily through psychological mechanisms rather than through direct behavioral pathways [8, 33]. The results extend Social Exchange Theory by suggesting that psychological trust repair may function as a key mechanism linking leadership signals to safety engagement. At the same time, the findings highlight the role of perceived susceptibility as a contextual condition shaping how leadership signals are interpreted. Integrating insights from HBM and SDT also helps explain why discretionary safety behaviors, such as adaptability, are more likely to emerge when employees experience restored confidence rather than simply the presence of leadership authority.

From a practical perspective, the findings suggest that visible leadership alone may not be sufficient during concurrent crises if employees do not perceive that the organization remains capable of managing safety risks. Leaders therefore need to communicate not only procedures and protocols but also reassurance, concern, and organizational preparedness in order to rebuild employees' confidence in safety systems [41]. Leadership development programs in hospitality organizations should place greater emphasis on the psychological and relational aspects of crisis leadership, particularly in helping employees restore confidence during periods of uncertainty. Because belief restoration plays a central role in shaping safety engagement, organizations may also consider monitoring employees' perceptions of organizational safety capability as an important indicator of crisis resilience. When employees doubt the organization's ability to manage risks, leadership communication and behaviors must be carefully aligned with employee concerns to prevent disengagement and reduced safety participation [46].

V. CONCLUSION

This study contributes to the growing literature on safety leadership by examining how leadership influences employee safety behaviors in multi-crisis hospitality environments. Drawing on Social Exchange Theory, Self-Determination Theory, the Health Belief Model, and the Theory of Planned Behavior, the findings demonstrate that safety leadership does not exert a significant direct effect on safety behaviors. Instead, leadership influences behaviors indirectly through belief restoration. In addition, perceived susceptibility strengthens the relationship between safety leadership and belief restoration, indicating that employees who perceive higher vulnerability to risks become more attentive to leadership signals that reinforce confidence in organizational safety capability.

The findings highlight the importance of psychological processes in explaining how leadership influences safety engagement during prolonged disruption. Rather than directly producing behavioral compliance, leadership signals appear to first restore employees' confidence in the organization's ability to manage safety threats. In this sense, belief restoration functions as a cognitive recovery process that reconnects leadership signals with employee safety engagement. The results also suggest that perceived susceptibility operates

primarily as an attentional cue that shapes how employees interpret leadership signals rather than acting as a direct driver of behaviors.

From a practical perspective, the results imply that effective safety leadership involves more than enforcing safety procedures. Leaders must also engage in symbolic and psychological communication that reassures employees, reinforces motivation, and restores trust in organizational safety management. This becomes particularly important in high-uncertainty service contexts such as hospitality, where flexibility and discretionary judgement are often essential for maintaining safe work practices. Despite these contributions, several limitations should be acknowledged. First, the cross-sectional design restricts the ability to draw definitive causal conclusions. Although structural relationships were assessed using rigorous statistical procedures, longitudinal or experimental designs would provide stronger evidence regarding causal direction. Second, the sample was drawn from five hotels located within a single tourism destination, which may limit the generalizability of the findings to other sectors or crisis contexts. Third, all constructs relied on self-reported measures, which may introduce common method bias despite the procedural steps taken to minimize this risk. In addition, the second-order modelling approach adopted in this study may have introduced additional complexity that obscured the influence of specific sub-dimensions of leadership and safety behaviors. For instance, leadership care and leadership control may influence different psychological mechanisms, while safety adaptability may respond differently from compliance-oriented behaviors. Although the higher-order modelling approach is theoretically consistent with the integrated framework of this study, future research may benefit from examining these dimensions separately or adopting mixed modelling approaches.

Future research may extend these findings in several ways. Longitudinal studies could examine how belief restoration evolves over time as employees experience recurring or escalating crises. Additional contextual variables, such as organizational justice, psychological safety climate, or trust in senior management, may also help clarify the boundary conditions of safety leadership effectiveness. Cross-cultural comparisons across hospitality contexts may further reveal how leadership processes interact with different cultural attitudes toward authority, risk, and uncertainty. Finally, studies incorporating multi-informant data or intervention-based designs could provide deeper insight into how leadership training programs influence belief restoration and employee safety engagement in complex crisis environments.

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Author Contributions

Conceptualization, M.P.P.; methodology, M.P.P. and R.W.; validation, G.H.K., R.A.B., and I.E.P.K.; formal analysis, R.W.; investigation, R.W. and G.H.K.; data curation, R.W.; writing—original draft preparation, R.W.; writing—review and editing, M.P.P., G.H.K., R.A.B., I.E.P.K., and H.H.; visualization, R.W.; supervision, M.P.P.; project administration, M.P.P.; funding acquisition, M.P.P.

Conflicts of Interest

There is no conflict of interest declared by the authors.

Data Availability Statement

Data are available from the authors upon request.

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REFERENCES

1. Liu, L. W., Pahrudin, P., Tsai, C. Y., & Hao, L. (**2024**). Disaster, risk and crises in tourism and hospitality field: A pathway toward tourism and hospitality management framework for resilience and recovery process. *Natural Hazards Research*, *4*(4), 653–668.

2. Leta, S. D., & Chan, I. C. C. (**2021**). Learn from the past and prepare for the future: A critical assessment of crisis management research in hospitality. *International Journal of Hospitality Management, 95*, 102915.
3. Kim, Y. S., Shin, D. J., & Kim, B. K. (**2023**). Effect of COVID-19-induced changes on job insecurity, presenteeism, and turnover intention in the workplace: An investigation of generalized anxiety disorder among hotel employees using the GAD-7 scale. *Sustainability, 15*(6), 5377.
4. Arora, R. (**2024**). Building workplace resilience: Insights from employee engagement and technological advancement. In *Embracing transhumanism and genomics in human resources management* (p. 327).
5. Adra, I., Giga, S., Hardy, C., & Leka, S. (**2024**). What is safety leadership? A systematic review of definitions. *Journal of Safety Research, 90*, 181–191.
6. Dera, A. K., Adedokun, M. W., & Iyiola, K. (**2025**). The psychosocial safety climate's influence on safety behavior and employee engagement: Does safety leadership really count? *Behavioral Sciences, 15*(2), 179.
7. Kadher, Y., Alzubi, A., Berberoğlu, A., & Öz, T. (**2024**). Perceived leadership support, safety citizenship, and employee safety behavior in the construction industry: The role of safety learning. *Buildings, 14*(10), 3260.
8. Ta, M. T. D., Kim, T. E., & Gausdal, A. H. (**2022**). Leadership styles and safety performance in high-risk industries: A systematic review. *Safety and Reliability, 41*(1), 10–44.
9. Lyubykh, Z., Turner, N., Hershcovis, M. S., & Deng, C. (**2022**). A meta-analysis of leadership and workplace safety: Examining relative importance, contextual contingencies, and methodological moderators. *Journal of Applied Psychology, 107*(12), 2149.
10. Hoang, G., Yang, M., & Luu, T. T. (**2023**). Ethical leadership in tourism and hospitality management: A systematic literature review and research agenda. *International Journal of Hospitality Management, 114*, 103563.
11. Dutta, S., Arivazhagan, R., & Varma, H. D. (**2025**). Digital Marketing Strategies for Educational Certification Courses: A Conceptual Study. *Qubahan EcoLead Journal*, *4*(3), 1-18.
12. Prestwich, A., Kenworthy, J., & Conner, M. (**2024**). *Health behavior change: Theories, methods and interventions*. Routledge.
13. Jaaffar, A. H., Alzoubi, R. H., Alkharabsheh, O. H. M., & Rajadurai, J. (**2023**). Leadership and crisis management and their link to improvement of hotel performance: A study of the Jordanian hotel sector. *Heliyon, 9*(7).
14. Mezentseva, A., Gracia, F. J., Silla, I., & Martínez-Córcoles, M. (**2023**). The role of empowering leadership, safety culture and safety climate in the prediction of mindful organizing in an air traffic management company. *Safety Science, 168*, 106321.
15. Imam, H., Zaheer, M. K., & Sekiguchi, T. (**2025**). Safety leadership, participation, and knowledge sharing: Catalysts for safety compliance. *Construction Innovation*.
16. Murugan, M., & Prabadevi, M. N. (**2025**). Emotional intelligence, leadership, governance and management strategy: Key drivers of business sustainability in engineering services. *Qubahan Academic Journal, 5*(1), 318–333.
17. Zhang, J., Xie, C., Wang, J., Morrison, A. M., & Coca-Stefaniak, J. A. (**2020**). Responding to a major global crisis: The effects of hotel safety leadership on employee safety behavior during COVID-19. *International Journal of Contemporary Hospitality Management, 32*(11), 3365–3389.
18. Colmekcioglu, N., Dineva, D., & Lu, X. (**2022**). "Building back better": The impact of the COVID-19 pandemic on the resilience of the hospitality and tourism industries. *International Journal of Contemporary Hospitality Management, 34*(11), 4103–4122.
19. Zhang, X., Wang, Z., Jiang, X., & Xu, F. (**2025**). The cost of exploitative leadership: How self-control depletion and organizational support shape employee outcomes. *Frontiers in Psychology, 16*, 1701529.
20. Schaedler, L., Graf-Vlachy, L., & König, A. (**2022**). Strategic leadership in organizational crises: A review and research agenda. *Long Range Planning, 55*(2), 102156.
21. Zhang, J., Xie, C., & Huang, S. (**2024**). Resilient leadership in hospitality and tourism enterprises: Conceptualization and scale development. *International Journal of Contemporary Hospitality Management, 36*(4), 1299–1326.
22. Rindrasih, E., Ratminto, Effendi, K. C., & Silviani, D. (**2024**). Expert perspectives on disaster risk reduction strategies in the tourist area of Borobudur–Yogyakarta–Prambanan in Indonesia. *Progress in Disaster Science, 24*, 100379.
23. Alam, M. D., Pandin, M. G., Muzayanah, U., Muawanah, S., & Huda, K. (**2023**). The impact of leadership, stakeholder roles, and tourist actor competence on tourism destination in Indonesia. *Qubahan Academic Journal, 3*(4), 188–197.
24. Sholeha, A. W., Sumarmi, Utaya, S., & Bachri, S. (**2025**). Tourism city stakeholders' perspectives on natural disaster risk based on an applied destination resilience model. *Journal of Ecotourism*, 1–32.
25. Ivkov, M., Blešić, I., Janićević, S., Kovačić, S., Miljković, Đ., Lukić, T., & Sakulski, D. (**2019**). Natural disasters vs hotel industry resilience: An exploratory study among hotel managers from Europe. *Open Geosciences, 11*(1), 378–390.

26. Melián-Alzola, L., Fernández-Monroy, M., & Hidalgo-Peñate, M. (**2020**). Hotels in contexts of uncertainty: Measuring organisational resilience. *Tourism Management Perspectives, 36*, 100747.
27. Wallenburg, C. M., & Handfield, R. (**2022**). Social exchange theory. In *Handbook of theories for purchasing, supply chain and management research* (pp. 267–282). Edward Elgar Publishing.
28. Al-Mekhlafi, A.-B. A., Isha, A. S. N., Abdulrab, M., Ajmal, M., & Kanwal, N. (**2022**). Moderating effect of safety culture on the association between work schedule and driving performance using the theory of situation awareness. *Heliyon, 8*(11).
29. Ishdorj, S., Ahn, C. R., & Park, M. (**2024**). Major factors influencing safety knowledge-sharing behaviors of construction field workers: Worker-to-worker level safety communication. *Journal of Construction Engineering and Management, 150*(4), 04024021.
30. Jia, Q., Martínez-Hernández, C., & Peña-Martínez, J. (**2025**). Mapping the integration of theory of planned behavior and self-determination theory in education: A scoping review on teachers' behavioral intentions. *Education Sciences, 15*(11), 1529.
31. Yap, J. B. H., & Lee, W. K. (**2020**). Analysing the underlying factors affecting safety performance in building construction. *Production Planning & Control, 31*(13), 1061–1076.
32. Zhang, S., Li, X., Long, Y., Li, X., Shi, Y., Zeng, J., & Nie, B. (**2025**). An empirical study on the driving mechanisms of proactive hazard identification behavior among frontline coal miners: Insights from the TPB-SOR model. *Engineering, Construction and Architectural Management*.
33. Klein, G. (**2023**). Transformational and transactional leadership, organizational support and environmental competition intensity as antecedents of intrapreneurial behaviors. *European Research on Management and Business Economics, 29*(2), 100215.
34. Tahapary, K. Y., & Laksono, A. R. (**2025**). The effect of safety leadership on safety compliance: The mediation role of safety behaviors and safety motivation. *Golden Ratio of Human Resource Management, 5*(2), 436–448.
35. Shabani, S., Moen, B. E., Abegaz, T., & Mamuya, S. H. (**2025**). Safety climate and occupational injuries in the iron and steel industries in Tanzania. *International Journal of Environmental Research and Public Health, 22*(9), 1372.
36. Hahang, E., Bayraktar, S., & Jiménez, A. (**2022**). Early evidence of leadership skills and strategies in managing the impact of COVID-19 pandemic in the hospitality industry. *Cross Cultural & Strategic Management, 29*(3), 493–515.
37. Wu, T. C., Chen, C. H., & Li, C. C. (**2008**). A correlation among safety leadership, safety climate and safety performance. *Journal of Loss Prevention in the Process Industries, 21*(3), 307–318.
38. Li, B., Huang, Y., Lim, H. W., Wang, L., & Fang, D. (**2026**). How foreman safety leadership influences worker safety behavior: An empirical study from a developmental psychology perspective. *Journal of Construction Engineering and Management, 152*(2), 04025254.
39. Puspitarini, M., & Martiana, T. (**2024**). Safety climate and safety leadership influence on safety performance in East Kalimantan heavy equipment employees. *Media Gizi Kesmas, 13*(2), 641–651.
40. Dong, R. K., Li, X., & Hernan, B. R. (**2024**). Psychological safety and psychosocial safety climate in the workplace: A bibliometric analysis and systematic review towards a research agenda. *Journal of Safety Research, 91*, 1–19.
41. Schowalter, A. F., & Volmer, J. (**2024**). Servant and crisis manager? The association of servant leadership with followers' adaptivity and proactivity. *Journal of Leadership & Organizational Studies, 31*(4), 433–452.
42. Bandura, A. (**1971**). *Social learning theory*. General Learning Press.
43. Kim Quy, H. T., Tran, M. D., & Dinh, T. M. (**2025**). Employees' belief restoration in a crisis context: The role of servant leadership, workplace spirituality, and proactive personality. *Human Resource Development International, 28*(1), 56–78.
44. Artinger, F. M., Marx-Fleck, S., Junker, N. M., Gigerenzer, G., Artinger, S., & van Dick, R. (**2025**). Coping with uncertainty: The interaction of psychological safety and authentic leadership in their effects on defensive decision making. *Journal of Business Research, 190*, 115240.
45. Chen, J. K., & Sriphon, T. (**2022**). Authentic leadership, trust, and social exchange relationships under the influence of leader behavior. *Sustainability, 14*(10), 5883.
46. Baquero, A. (**2023**). Authentic leadership, employee work engagement, trust in the leader, and workplace well-being: A moderated mediation model. *Psychology Research and Behavior Management, 16*, 1403–1424.
47. Carrington, D. J., Combe, I. A., & Mumford, M. D. (**2019**). Cognitive shifts within leader and follower teams: Where consensus develops in mental models during an organizational crisis. *The Leadership Quarterly, 30*(3), 335–350.
48. Khairy, H. A., Baquero, A., & Al-Romeedy, B. S. (**2023**). The effect of transactional leadership on organizational agility in tourism and hospitality businesses: The mediating roles of organizational trust and ambidexterity. *Sustainability, 15*(19), 14337.
49. Biggs, A., & Brough, P. (**2025**). Stress and coping theory. In *Handbook of concepts in health, health behavior and environmental health* (pp. 1–23). Springer Nature Singapore.

50. Hair, J., & Alamer, A. (**2022**). Partial least squares structural equation modeling (PLS-SEM) in second language and education research: Guidelines using an applied example. *Research Methods in Applied Linguistics, 1*(3), 100027.
51. Hair, J. F., Astrachan, C. B., Moisescu, O. I., Radomir, L., Sarstedt, M., Vaithilingam, S., & Ringle, C. M. (**2021**). Executing and interpreting applications of PLS-SEM: Updates for family business researchers. *Journal of Family Business Strategy, 12*(3), 100392.
52. Asad, M., Kashif, M., Sheikh, U. A., Asif, M. U., George, S., & Khan, G. U. H. (**2022**). Synergetic effect of safety culture and safety climate on safety performance in SMEs: Does transformational leadership have a moderating role? *International Journal of Occupational Safety and Ergonomics, 28*(3), 1858–1864.
53. Saleem, F., & Malik, M. I. (**2022**). Safety management and safety performance nexus: Role of safety consciousness, safety climate, and responsible leadership. *International Journal of Environmental Research and Public Health, 19*(20), 13686.
54. Henseler, J., Ringle, C. M., & Sarstedt, M. (**2015**). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science, 43*(1), 115–135.
55. Sarstedt, M., Hair Jr, J. F., Cheah, J.-H., Becker, J.-M., & Ringle, C. M. (**2019**). How to specify, estimate, and validate higher-order constructs in PLS-SEM. *Australasian Marketing Journal, 27*(3), 197–211.
56. Aldaihani, F. M. F., Islam, M. A., & Aldaihani, D. K. (**2025**). Justifications for adopting mediation and moderation variables in quantitative research: What, why and when to use. *Journal of International Business and Management, 8*(3), 1–7.
57. Cheung, G. W., Cooper-Thomas, H. D., Lau, R. S., & Wang, L. C. (**2024**). Reporting reliability, convergent and discriminant validity with structural equation modeling: A review and best-practice recommendations. *Asia Pacific Journal of Management, 41*(2), 745–783.
58. Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (**2019**). When to use and how to report the results of PLS-SEM. *European Business Review*.
59. Shmueli, G., Sarstedt, M., Hair, J. F., et al. (**2019**). Predictive model assessment in PLS-SEM. *European Journal of Marketing*.
60. Madison, K., Eva, N., De Cieri, H., & Goh, Z. (**2025**). Social exchange theory in leadership research: A problematizing review. *The Leadership Quarterly, 36*(6), 101924.
61. Hagger, M. S., Cheung, M. W.-L., Ajzen, I., & Hamilton, K. (**2022**). Perceived behavioral control moderating effects in the theory of planned behavior: A meta-analysis. *Health Psychology, 41*(2), 155.
62. Ryan, R. M. (Ed.). (**2023**). *The Oxford handbook of self-determination theory*. Oxford University Press.
63. Pandey, A., Maheshwari, M., & Malik, N. (**2025**). A systematic literature review on employee well-being: Mapping multi-level antecedents, moderators, mediators and future research agenda. *Acta Psychologica, 258*, 105080.