

Strategic Human Resource Management Adaptation for Enhancing Workforce Resilience in Disaster (Management)-Prone Organizations

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ABSTRACT

The frequency and complexity of natural and man-made disasters, including pandemics and climate-related crises, demand that organizations—particularly those in high-risk sectors—prioritize workforce resilience. Strategic Human Resource Management (SHRM) plays a vital role in fostering such resilience by aligning HR practices with long-term adaptability, psychological support, and crisis preparedness. This study aims to examine how SHRM adaptations contribute to workforce resilience in disaster-prone sectors. It identifies the relative influence of four SHRM dimensions—strategic workforce planning, crisis-specific training, psychological support services, and leadership development—on employee resilience outcomes. A quantitative, cross-sectional survey was conducted among 285 professionals from healthcare, emergency services, humanitarian aid, and critical infrastructure sectors. A structured questionnaire assessed SHRM practices and workforce resilience using validated instruments. Exploratory factor analysis confirmed construct validity, and Cronbach's alpha ensured reliability ($\alpha > 0.79$). Data were analyzed using descriptive statistics, Pearson correlations, multiple regression, and ANOVA with SPSS 26. Strategic workforce planning ($M = 4.01$, $SD = 0.58$) and leadership development ($M = 3.94$, $SD = 0.62$) were highly rated SHRM practices. Workforce resilience also scored high ($M = 4.03$, $SD = 0.56$). All SHRM dimensions significantly predicted resilience, with strategic planning ($\beta = 0.27$) and leadership ($\beta = 0.25$) showing the strongest effects. The model explained 46% of the variance in workforce resilience ($R^2 = 0.46$). ANOVA revealed significant sectoral differences ($F = 4.37$, $p = 0.005$), with healthcare and emergency services reporting higher

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resilience than critical infrastructure. SHRM is a key strategic enabler of workforce resilience in disaster-prone organizations. Proactive HR planning, leadership development, and integrated support systems significantly enhance employees' ability to adapt and perform under crisis. These findings advocate for embedding resilience-focused HR practices across organizational levels, particularly in high-risk sectors facing recurrent disruptions.



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1. Introduction

Pandemics, climate-related catastrophes, humanitarian crises, and other man-made and natural disasters are becoming more frequent and severe, which presents serious problems for organisations that operate in high-risk contexts. Establishing and sustaining staff resilience is not just a strategic benefit but also a requirement in these kinds of situations. With its integrative and long-term focus, strategic human resource management (SHRM) has become an essential factor for improving organisational consistency, responsiveness, and flexibility in times of crisis [5], [2]. The ability of workers to tolerate anxiousness, bounce back from hardship, and continue to operate well under duress is known as workforce robustness. In addition to personal characteristics, organisational systems that promote ongoing education, mental health, adaptable work arrangements, and inclusive leadership also help to build this resilience [4]. Through focused interventions in areas like crisis-specific training programs, employee support networks, scenario-based workforce planning, and leadership development for uncertainty management, SHRM can facilitate such conditions [3].

Recent studies have emphasized the importance of SHRM adaptation in disaster-prone sectors—including healthcare, emergency response, and humanitarian aid—where employees are directly exposed to operational disruptions and psychological strain [6], [1]. Strategic HR responses that are proactive, context-sensitive, and aligned with risk management frameworks are shown to significantly improve workforce preparedness, engagement, and recovery capacity. Given these evolving demands, this study explores the mechanisms through which SHRM adaptations contribute to workforce resilience in disaster-prone organizations, offering insights into policy design and implementation for organizational sustainability in high-risk contexts.

2. RESEARCH METHODS

This study adopted a quantitative, cross-sectional research design to investigate the impact of Strategic Human Resource Management (SHRM) adaptations on workforce resilience in disaster-prone organizations. The quantitative approach allowed for the systematic measurement of key variables and the identification of statistical relationships between SHRM practices and employee resilience. The research focused on organizations operating in high-risk sectors such as healthcare, emergency response, humanitarian aid, and critical infrastructure, where preparedness and recovery capacities are vital. The target population included HR professionals, departmental managers, and operational employees directly involved in organizational response and continuity planning. A stratified random sampling technique was employed to ensure representation across different sectors and organizational roles. The sample size was determined using Cochran's formula for multiple regression, and a total of 300 participants were selected to provide adequate statistical power and generalizability. Data were collected using a structured, self-administered

questionnaire, which was developed based on established instruments from prior studies. The questionnaire was divided into three sections. The first section gathered demographic data such as age, gender, job position, sector, and years of experience. The second section measured SHRM adaptation practices using modified items from [13], [10], focusing on strategic workforce planning, crisis-oriented training programs, psychological support services, and leadership development during uncertainty. The third section assessed workforce resilience using items adapted from the Connor-Davidson Resilience Scale (CD-RISC) and the Employee Resilience Scale by Näswall et al. (2015), evaluating constructs such as adaptability, coping ability, and psychological endurance. All responses were captured on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). To ensure content validity, the initial questionnaire was reviewed by a panel of experts in SHRM, organizational psychology, and disaster management. Construct validity was assessed through exploratory factor analysis (EFA) using principal component analysis with varimax rotation. Items with factor loadings below 0.50 were removed. Reliability of the instrument was evaluated through Cronbach's alpha, and all constructs demonstrated acceptable internal consistency with alpha values exceeding the threshold of 0.70. Data were analyzed using Statistical Package for the Social Sciences (SPSS) version 26. Descriptive statistics were used to summarize demographic characteristics and variable distributions. Pearson correlation coefficients were calculated to assess the strength and direction of relationships between SHRM practices and workforce resilience. To test the hypotheses, multiple linear regression analysis was conducted to examine the predictive power of SHRM adaptation dimensions on employee resilience outcomes. To ascertain whether there were notable variations in resilience levels within organisational sectors or employee roles, analysis of variance (ANOVA) was also employed. Standard assumptions, such as normality, linearity, multicollinearity, and homoscedasticity, were verified before regression analysis was performed. Before any data was collected, all relevant ethical issues were taken care of. The goal of the study was explained to the participants, and they received assurances that their answers would remain anonymous and confidential. Each responder gave their informed consent, and the appropriate Institutional Review Board (IRB) gave its ethical approval.

3. RESULTS AND DISCUSSION

The descriptive statistics provide an overview of the respondents' perceptions regarding the implementation of Strategic Human Resource Management (SHRM) practices and their levels of workforce resilience (Table 1). Among the SHRM components, strategic workforce planning had a high mean score ($M = 4.01$, $SD = 0.58$), indicating that most organizations in disaster-prone sectors are actively planning for future workforce needs. Leadership development also showed a relatively high mean ($M = 3.94$, $SD = 0.62$), suggesting that initiatives to strengthen leadership capacity during crises are common and well-recognized by employees. Crisis-specific training had a slightly lower mean ($M = 3.87$, $SD = 0.65$), while psychological support services received the lowest average rating ($M = 3.68$, $SD = 0.71$), indicating that although such services are present, they may be underutilized or underdeveloped in some organizations. Importantly, the mean score for workforce resilience was the highest ($M = 4.03$, $SD = 0.56$), suggesting that employees generally perceive themselves as capable of adapting and performing under pressure, despite varying levels of HR support. The internal consistency of the measurement scales was assessed using Cronbach's alpha (Table 2). All constructs demonstrated strong reliability, with alpha values ranging from 0.79 to 0.86. Workforce resilience had the highest reliability ($\alpha = 0.86$), followed closely by strategic workforce planning ($\alpha = 0.84$) and leadership development ($\alpha = 0.83$). These results confirm that the instruments used in the study consistently measured the intended concepts. The reliability coefficients above the commonly accepted threshold of 0.70 indicate that the items within each construct were closely related and that the survey instrument was statistically sound for further analysis. The Pearson correlation matrix reveals statistically significant positive correlations among all SHRM variables and workforce resilience, with significance at the $p < 0.01$ level (Table 3). The strongest correlation was found between strategic workforce

planning and crisis-specific training ($r = 0.62$), followed by the relationship between strategic workforce planning and leadership development ($r = 0.60$). These strong interrelations suggest that these HR practices often occur in tandem within effective organizations. Regarding resilience, all SHRM practices showed moderate to strong correlations with workforce resilience, including strategic workforce planning ($r = 0.52$), leadership development ($r = 0.50$), crisis-specific training ($r = 0.48$), and psychological support ($r = 0.44$). These findings suggest that improved implementation of SHRM practices is associated with higher levels of employee resilience.

The multiple regression results provide deeper insight into the predictive power of SHRM practices on workforce resilience (Table 4). All four SHRM dimensions—strategic workforce planning, crisis-specific training, psychological support services, and leadership development—had statistically significant positive effects on workforce resilience ($p < 0.001$ for all). Among them, strategic workforce planning ($\beta = 0.27$) was the strongest predictor, indicating that organizations that engage in proactive HR planning are more likely to foster a resilient workforce. Leadership development ($\beta = 0.25$) and crisis-specific training ($\beta = 0.22$) were also substantial contributors, emphasizing the importance of equipping leaders and employees with the skills and mindset needed to navigate disruptions. Psychological support ($\beta = 0.18$), though slightly weaker, remained significant, confirming the value of emotional and mental health support in resilience building. The model accounted for 46% of the variance in workforce resilience ($R^2 = 0.46$), indicating a strong explanatory capacity of SHRM practices in the resilience framework. The ANOVA test revealed a statistically significant difference in workforce resilience across sectors ($F = 4.37$, $p = 0.005$), suggesting that sectoral context plays a meaningful role in shaping employee resilience (Table 5). Post-hoc Tukey tests further indicated that employees in the healthcare and emergency services sectors had significantly higher levels of resilience compared to those in critical infrastructure. This result may reflect the greater exposure of healthcare and emergency personnel to crisis environments, leading to better institutional preparation and more refined SHRM practices. It may also indicate sectoral differences in the prioritization of training, planning, and psychological support systems.

Table 1: Descriptive Statistics of Key Variables (N = 285)

Variable	Mean (M)	Std. Deviation (SD)
Strategic Workforce Planning	4.01	0.58
Crisis-Specific Training	3.87	0.65
Psychological Support Services	3.68	0.71
Leadership Development	3.94	0.62
Workforce Resilience	4.03	0.56

Table 2: Reliability Coefficients (Cronbach's Alpha)

Construct	No. of Items	Cronbach's Alpha (α)
Strategic Workforce Planning	6	0.84
Crisis-Specific Training	5	0.81
Psychological Support Services	4	0.79
Leadership Development	5	0.83
Workforce Resilience	7	0.86

Table 3: Pearson Correlation Matrix

Variables	1	2	3	4	5
1. Strategic Workforce Planning	—				
2. Crisis-Specific Training	0.62**	—			

3. Psychological Support	0.55**	0.58**	—
4. Leadership Development	0.60**	0.59**	0.53** —
5. Workforce Resilience	0.52**	0.48**	0.44** 0.50** —

Note: $p < 0.01$

Table 4: Multiple Regression Analysis (Dependent Variable: Workforce Resilience)

Predictor	Standardized Beta (β)	t-value	Sig. (p)
Strategic Workforce Planning	0.27	5.21	0.000
Crisis-Specific Training	0.22	4.63	0.000
Psychological Support Services	0.18	3.72	0.000
Leadership Development	0.25	4.89	0.000

Model Summary: $R^2 = 0.46$, $F(4, 280) = 59.26$, $p < 0.001$

Table 5: ANOVA – Resilience Differences Across Sectors

Source	SS	df	MS	F	Sig. (p)
Between Groups	4.68	3	1.56	4.37	0.005
Within Groups	100.16	281	0.36		
Total	104.84	284			

Post-hoc Tukey Test: Healthcare and Emergency Services > Critical Infrastructure ($p < 0.05$)

The results of this study reinforce the critical role of Strategic Human Resource Management (SHRM) in enhancing workforce resilience within disaster-prone organizations. The findings revealed that employees perceive relatively high levels of resilience, which correlate positively with strategic HR practices such as workforce planning, crisis-specific training, leadership development, and psychological support services. These results align with earlier studies that highlight SHRM as a central mechanism for organizational adaptability and crisis preparedness [13], [9]. Among all SHRM dimensions, strategic workforce planning emerged as the most influential predictor of employee resilience. This suggests that when organizations proactively anticipate human resource needs, skill gaps, and contingency strategies, employees are better equipped to handle uncertainty and disruption. This finding is consistent with [11], who argued that resilience is not only a reactive quality but can be strategically cultivated through foresight and preparation embedded in HR systems. Leadership development also demonstrated a strong predictive relationship with workforce resilience. Employees who observed competent, crisis-capable leadership reported higher levels of adaptability and psychological endurance. This supports the view that resilient leadership is a cornerstone of employee confidence and emotional stability during crises [10], [7]. Effective leaders play a dual role: guiding operational continuity and reinforcing a culture of resilience through communication, empathy, and decisiveness. Crisis-specific training and psychological support services, while slightly less influential than the above factors, also had a statistically significant impact on workforce resilience. These findings suggest that employee readiness is not merely technical but also emotional. Regular exposure to emergency scenarios, drills, and decision-making simulations can enhance an individual's coping mechanisms, as noted by [14]. At the same time, psychological services offer a buffer against burnout, anxiety, and post-traumatic stress—factors that have been particularly relevant during health emergencies such as the COVID-19 pandemic [9]. The positive correlations among SHRM practices further suggest that these initiatives function most effectively when implemented as an integrated strategy rather than as isolated interventions. For instance, leadership development is likely to have more meaningful results when combined with strategic planning and emotional support systems. This interdependence supports the systems-thinking approach advocated by [15], which emphasizes alignment across HR domains for sustained organizational performance and resilience. Moreover, the sectoral differences revealed through ANOVA—particularly the

higher resilience scores in healthcare and emergency services—suggest that sector-specific exposure to crises strengthens institutional HR responses over time. These sectors may have matured resilience systems due to repeated encounters with disaster events, leading to better SHRM investments. This aligns with previous research showing that healthcare systems that engage in regular resilience training and policy evolution are better prepared to handle crisis surges [12]. However, the relatively lower ratings for psychological support services across all sectors point to a gap in HR practices that requires greater attention. While organizations appear to be investing in planning and leadership, the mental and emotional dimensions of resilience may be underprioritized. Given the increasing psychosocial risks in disaster-prone work environments, particularly in post-disaster recovery phases, there is a pressing need to embed trauma-informed HRM approaches into resilience frameworks [8]. In summary, this study provides empirical support for the assertion that SHRM adaptations are key enablers of workforce resilience in high-risk sectors. It extends prior literature by quantifying the relative influence of different HR practices and highlighting the interplay between technical readiness, leadership capacity, and emotional well-being. The findings underscore the need for holistic, strategic, and context-specific HR interventions that support employees before, during, and after disasters.

4. CONCLUSION

This study set out to examine the role of Strategic Human Resource Management (SHRM) practices in enhancing workforce resilience within disaster-prone organizations. Drawing on empirical data from 285 participants across sectors such as healthcare, emergency services, humanitarian aid, and critical infrastructure, the findings provided robust evidence that SHRM adaptations are essential for building and sustaining employee resilience in high-risk environments. The results demonstrated that key SHRM dimensions—strategic workforce planning, crisis-specific training, psychological support services, and leadership development—are significantly and positively associated with workforce resilience. Among these, strategic workforce planning and leadership development were the strongest predictors, highlighting the value of proactive preparation and competent leadership in fostering a resilient workforce. Additionally, crisis-specific training and emotional support mechanisms also contributed meaningfully, underscoring the importance of equipping employees not only with technical skills but also with psychological resources to manage uncertainty and recover from disruptions. The study also revealed notable differences across sectors, with healthcare and emergency services reporting higher resilience levels, likely due to their frequent exposure to crisis conditions and more mature HR systems. These findings underscore the need for sector-specific HR strategies and the integration of resilience-building initiatives into daily organizational practices. In conclusion, the evidence affirms that SHRM is not just a supportive function, but a strategic enabler of organizational resilience. For disaster-prone organizations, investing in adaptive, holistic, and future-oriented HR practices is essential for preparing their workforce to thrive under adversity. As global disruptions—such as pandemics, natural disasters, and geopolitical crises—become more frequent and complex, the strategic alignment of human resource management with resilience objectives is not only desirable but imperative.

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