



The Impact of Workload and Work Risk on Work Performance: The Mediating Role of Work Satisfaction among Sabah Firefighters

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ABSTRACT

This study examines the impact of workload and work risk on work performance, with work satisfaction as a mediator, among firefighters in Sabah, Malaysia. Using the Job Demands–Resources (JD-R) model, the research explores how job demands influence performance in high-risk environments. Data from 321 frontline firefighters were analyzed using structural equation modeling with partial least squares (PLS-SEM). The results show that while workload did not directly affect performance, it had a negative influence on work satisfaction, which in turn impacted performance. In contrast, work risk had a positive effect on both work satisfaction and performance. Work satisfaction substantially improves work performance. Work satisfaction mediates the negative impact of workload on performance, while no mediation effect is found between work risk and performance through satisfaction. These findings underscore the significance of work satisfaction in high-demand professions and offer practical implications for enhancing firefighter resilience and performance within the fire and rescue sector.

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INTRODUCTION

Firefighting is a high-risk profession that demands a fast decision-making process and strong endurance (Samsudin et al., 2021). Firefighters typically work under stressful conditions, dealing with a heavy workload and dangerous exposure that can have an impact on their working performance. Work performance is defined as actions and behaviors of individuals that are under their control and that affect the organization's goal attainment (Rotundo and Sackett, 2002). Employee performance is a critical predictor of organizational results and success. Empirical evidence has revealed that the cognitive and physical aspects of work performance are negatively influenced by excessive workload, exposure to work-related risks, and stress (Perez-Floriano and Gonzalez, 2019; Bjaalid et al., 2020; Khan et al., 2024). In the firefighting context, stressors impair effectiveness, raise the risk of errors, increase the likelihood of burning out, and diminish both individual and group performance (Abdul Rahman et al., 2019). Stressors of firefighters are associated with negative work motivation and reductions in work capacity (Igboanugo et al., 2021). This may lead to firefighters being less alert, experiencing vague judgment, and ultimately poor work performance.

Employee workload is one of the most stressful factors among professionals (Oplatka et al., 2017) and is the particular concern of the present study. Firefighting work is demanding, full of physical and mental challenges, and can be stressful for those working in it. Specifically, firefighters frequently deal with a high workload coupled with the inherent risk, which results in affecting their performance and well-being (Park et al., 2024). Workload is the amount of work and other duties that an organization assigns to employees and requires employees to finish these tasks in a certain schedule (Janib et al., 2021). At the same time, work risk encompasses the dangers and life-threatening situations that are part of the occupation. Studies have consistently shown that high workloads could cause burnout (Wulantika et al., 2023) and stress (Sadiq, 2022). However, while the negative effects of high workloads on well-being and performance are well-documented, there remains a gap in understanding how these workloads interact with the unique risks faced in the firefighter profession.

The second focal area of the study is work risk, which encompasses the risk of being in a situation or physical environment where exposure to hazardous substances, physical dangers, or life-threatening scenarios causes substantial psychological and physical strain on employees (Rusmiati et al., 2021). This can significantly increase work stress, burnout, and job performance decrement. Within high-risk occupations, such as firefighting, these risks are further compounded by arduous workloads and unknown threats, resulting in higher rates of mental health-related problems, reduced work satisfaction, and performance (Yu et al., 2018; Yu et al., 2020). Nevertheless, the relevance of work risk on work performance in the Malaysian firefighting profession is less understood, despite increasing attention to the significant contribution of work risk to work performance.

Although the workload and work risk are important factors affecting job performance, work satisfaction also plays a crucial role in the association. Work satisfaction is a broader concept that encompasses the overall happiness and contentment of one's career life or a workplace (Drafke, 2009). This study considers work satisfaction because it is more comprehensive and has long been recognized as an important factor influencing job performance (Kautish et al., 2024; Cao et al., 2025). Although the literature has devoted considerable attention to workload and work risk and their effects on work performance, the mediating role of work satisfaction on these associations is an area that still lacks exploration, especially in the firefighter sample.

Therefore, the purpose of the present study was to examine whether work satisfaction mediates the relationship between workload, work risk, and work performance among firefighters in Sabah, Malaysia. This research is based on the Job Demands-Resources (JD-R) model, which posits that job demands (e.g., workload, work risk) may result in stress and burnout, while job resources (e.g., work satisfaction) may buffer these effects and produce higher performance (Bakker and Demerouti, 2017). In this sense, this study will add to the literature on the JD-R theory in a firefighting context by revealing how job demands and resources interact to predict work performance, particularly in demanding occupations. In practical terms, the results are anticipated to bring about a new perspective on organizational policies and practices in the firefighting services in Sabah that will help to improve work conditions in order to mitigate burnout and enhance the performance and well-being of firefighters. More specifically, it is incumbent upon this study to attain the following objectives:

- 1) Investigate the interactions among workload, work risk, and work performance among firefighters in Sabah.
- 2) Evaluate the mediating influence of work satisfaction on the association between workload, work risk, and work engagement.

LITERATURE REVIEW

Job Demand-Resource Model

The Job Demand-Resource (JD-R) model (Bakker and Demerouti, 2007) has established itself as a top framework to investigate how job demands and resources shape work performance. Job demands refer to those physical, social, or job sequence-related characteristics of work that require sustained physical or mental effort and are associated with certain physiological and psychological costs (Demerouti et al., 2001). According to the JD-R model, as job demands (e.g., role ambiguity, workload, time pressure, and employment insecurity) increase, additional effort is needed to meet goals at work and avoid performance decrement, challenging and motivating employees in their work. In contrast, job resources are physical, social, or organizational aspects of the job, which facilitate achieving work goals, reduce job demands and the associated costs, or stimulate personal growth and development (Demerouti et al., 2001). Job resources (e.g., job autonomy, social support, and feedback) facilitate the attainment of organizational goals, reduce job demands, and enhance work engagement (Crawford et al., 2010). Job resources are assumed to function as intrinsic motivational resources through enhancing employees' developmental and learning potential, or as extrinsic motivational resources through the instrumentalization of achieving work goals. Previous studies have strongly evidenced the positive relationship between job resources and work engagement (Bakker and Demerouti, 2007; Schaufeli and Salanova, 2007).

This theory is especially relevant in the current study of Malaysian firefighters in Sabah, considering its adaptive and empirically grounded classification for exploring the relationship between work-related stressors and performance outcomes among high-risk, high-demand occupations. Firefighters are frequently exposed to heavy workloads and work-related risks that are considered core job demands according to the JD-R model. These job demands can lead to impaired or improved work performance, depending on whether sufficient job resources are available.

Workload and Work Performance

An extensive workload is a job demand that can lead to undesirable consequences such as stress, fatigue, and burnout, ultimately affecting individual and organizational performance. According to the JD-R model, extreme job demands can deplete employees' resources and hamper performance (Schaufeli and Bakker, 2004). Work overload often reduces focus, increases errors, and slows work pace (Sonnentag, 2018). Numerous studies report a negative association between workload and performance (Johari et al., 2018; Bartram et al., 2023; Herdiana and Sary, 2023). Studies in Malaysia (Rahman et al., 2019; Samsudin et al., 2021) show that workload and job-related stressors lead to stress and mental health issues among firefighters, negatively impacting performance. Arifin et al. (2023) also found that both workload and work risk hinder performance. These studies highlight that workload negatively impacts performance. Based on this, the following hypothesis is proposed:

H1: Workload will negatively affect work performance.

Work Risk and Work Performance

Work risk, particularly in high-risk professions, has been shown to affect work performance significantly. The JD-R model emphasizes that high job demands, such as work risk, can deplete mental and emotional resources, leading to fatigue and burnout, directly undermining performance (Bakker and Demerouti, 2007; Schaufeli and Bakker, 2004). Moreover, work risk is associated with chronic stress, which diminishes cognitive functioning and decreases job satisfaction and performance (Sonnentag, 2018). As employees continuously encounter high-risk situations, their ability to maintain high levels of attention and make sound

judgments can decline, resulting in lower productivity and a higher likelihood of errors. In some cases, prolonged exposure to such stressors can lead to emotional exhaustion, further degrading overall performance (Maslach and Leiter, 2016). Research on work risk has previously been conducted, showing that work risk negatively affects performance (Rusmiati et al., 2021; Arifin et al., 2023). Given these findings, it is hypothesized that:

H2: Work risk will negatively affect work performance.

Workload and Work Satisfaction

High workloads are often associated with negative outcomes, including stress, burnout, and reduced job satisfaction (Kumar and Mini, 2023; Kim and Yeo, 2024). The JD-R model suggests that excessive job demands, including workload, deplete employees' resources, lowering satisfaction and increasing stress (Schaufeli and Bakker, 2004). Heavy workloads also impact both physical and mental health, contributing to fatigue and decreased performance (Sadiq, 2022). In Malaysia, Mariapan et al. (2023) found that work satisfaction among firefighters was influenced by hazard protection and welfare factors. Mohd Zahari et al. (2019) highlighted the importance of the work environment and coworker support, while Sakirun and Dousin (2021) noted that high job demands with limited control increase stress and affect satisfaction. These studies emphasize that workload negatively impacts satisfaction. Based on this, the following hypothesis is proposed:

H3: Workload will negatively affect work satisfaction.

Work Risk and Work Satisfaction

Work satisfaction is often related to employees' perceptions of work risk, which plays a vital role in organizational behavior and outcomes (Kuo et al., 2014). Nevertheless, there is a limited study on the intermediary effect relationship between employees' perception of work risk and work satisfaction. Work satisfaction is significantly associated with working conditions and job content. Insecure and unhealthy job features at work are negatively associated with employee work satisfaction (Thoresen et al., 2003). Occupational hazards and threats are examples of job demands that are highly associated with a loss of work satisfaction (Nielsen et al., 2011) within the JD-R concept. Work risk engenders harm to employees' physical or psychological health, and this is a type of job demand. Work-related risks are assumed to be the source of perceived risk about work, which can result in high stress states and low organizational commitment (Shan et al., 2022), thereby lowering employees' work satisfaction. Thus, the hypothesis formulated is:

H4: Work risk will negatively affect work satisfaction.

Work Satisfaction and Work Performance

The relationship between work satisfaction and work performance has been extensively studied, with regular meta-analyses illustrating these findings (Judge et al., 2001; Allan et al., 2019). A substantial body of evidence suggests that higher work satisfaction is positively correlated with better work performance (Heriyati and Ramadhan, 2012; Arifin et al., 2019; Chowhan and Pike, 2023). JD-R research has indicated that employees with a higher level of work satisfaction are more likely to function with motivation, engagement, and in a more productive manner (Bakker and Demerouti, 2007; Schaufeli and Bakker, 2004). Studies confirmed that job satisfaction positively influences the high level of work engagement and thereby enhances job performance by increasing attention, effort, and job-related creativity (Pio, 2018; Sungu et al., 2019; Torlak and Kuzey, 2019). Considering these findings, it is hypothesized that:

H5: Work satisfaction will positively influence work performance.

Work Satisfaction as Mediator Between Workload and Work Performance

Work satisfaction has been suggested as a mediator for the link between workload and work performance. Workload is also a strong predictor of burnout and stress (Sadiq, 2022; Wulanthika et al., 2023). Previous research has shown that workers tend to become fatigued after performing excessive workloads (Woranutipo

and Chavanovanich, 2021). This is because high workloads demand the physical and emotional investment of the worker to complete tasks to the satisfaction of organizations that need to see the performance outcomes (Marcionetti and Castelli, 2023). Therefore, when employees experience a high workload, their work satisfaction tends to decline due to the stress and emotional exhaustion associated with excessive demands (Chowhan and Pike, 2023). In turn, affects work performance, as dissatisfied employees are less engaged and motivated, which leads to lowered enthusiasm, energy, and happiness in job performance (Shantz et al., 2016; Poulouse and Dhal, 2020). In this sense, associations can be hypothesized as follows:

H6: Work satisfaction mediates the relationship between workload and work performance, such that high workload leads to decreased job satisfaction, which in turn negatively impacts work performance.

Work Satisfaction as Mediator Between Work Risk and Work Performance

The relationship between work risk and work performance is multifaceted, and work satisfaction plays an important mediating role. The adverse psychological effects can potentially lower work satisfaction among employees who experience very high levels of perceived risk, resulting in feelings of emotions that not only degrade their workplace motivation but also weaken their efficiency (Thoresen et al., 2003). This decrease in satisfaction typically results from stress and emotional fatigue due to overwhelming job demands (Sayin et al., 2023). When employees are unhappy, they are less motivated, less engaged, and less involved in their work. This negative shift in attitude affects their work performance, as dissatisfied employees often experience lower productivity, reduced effort, and a lack of enthusiasm for their tasks (Goetz and Wald, 2022). Thus, it is hypothesis that:

H7: Work satisfaction mediates the relationship between work risk and work performance, such that high work risk leads to decreased job satisfaction, which in turn negatively impacts work performance.

The proposed conceptual framework for the study is presented in Figure 1.

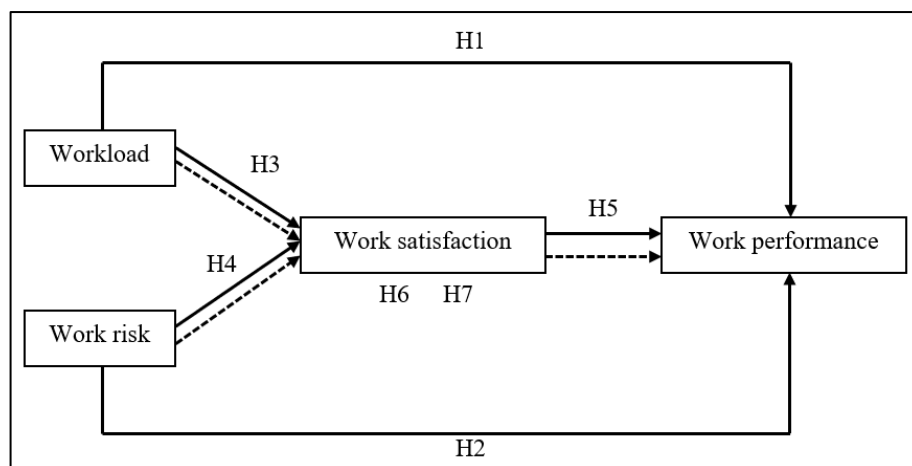


Figure 1 Conceptual framework

METHODOLOGY

Sample and Data Collection

Data was collected using simple random sampling to ensure all firefighters in Sabah had an equal chance of participation. This region was selected for its unique work environment and local factors, providing valuable insights into the work performance of firefighters in Malaysia.

Approval was obtained from the Director of the Fire and Rescue Department of Malaysia, Sabah State, to conduct field research and use their information system for distributing the online survey. A list of active firefighters in Sabah was compiled, and each was assigned a unique identifier. Firefighters were randomly selected using an online number generator. The Information Technology Unit assisted in identifying officers and distributing the survey via Google Forms to the selected firefighters in Sabah.

The ethical approval for this study was obtained from the Faculty of Business, Economics, and Accountancy Research Committee at Universiti Malaysia Sabah. In accordance with ethical guidelines, all participants were informed about the study's purpose and procedures, and written informed consent was obtained prior to their participation.

The sample size was calculated using G*Power Software v. 3.1.9.6 (Faul et al., 2007) and was found to be a minimum of 119 respondents for three predictors. A sample of 321 respondents was randomly drawn from a population of 549 firefighters in the West Coast Zone of Sabah.

The descriptive statistics of the respondents indicate that 19.6% of respondents are firefighters from Kota Kinabalu. The majority, 50.8%, are aged between 30 and 39 years. 74.8% have SPM-level education. Most respondents (38.3%) have served 16 to 25 years. A monthly income of over RM1,500 is reported by 58.9%, and 89.7% are married. The majority have 3 to 5 children, accounting for 43.6% of respondents.

Measurements

Workload was assessed by Wooten et al. (2010), the Job-Related Tension Index (JRTI) comprising 14 items. The Cronbach's alpha value of JRTI was high compared to previous studies (e.g., Azam et al., 2021; Nordin et al., 2022), which were 0.95 and 0.94. The Dynamic Risk Management measured work risk in the Fire and Rescue Emergency Operations Survey (DFES) of Penny (2016), which consists of four items. Reports of high-reliability scores above 0.94 (Akramin, 2021). Work performance was assessed with the Individual Work Performance Questionnaire (IWPQ) (Koopmans et al., 2013), comprising seven items. Reliability scores were in the range 0.72 to 0.81 in previous research (e.g., Lousã et al., 2024). Work satisfaction was assessed with the Spector Job Satisfaction Scale (JSS) (Spector, 1997), which consists of six items. Other studies include Ibrahim et al. (2014), who reported a Cronbach's alpha value of 0.76. A pilot test with thirty subjects with the characteristics of the study population was also performed. It demonstrated the reliability of the items, with a Cronbach's α coefficient greater than 0.70, validating the questionnaire used in the present study.

Data Analysis

In this study, the research model explained in Figure 1 was conducted using PLS-SEM to investigate the proposed relationship. PLS-SEM is appropriate when studying research models with interactive relationships (Hair et al., 2021). Accordingly, this is an appropriate approach for this study as it posits interconnected relationships among workload, work risk, work performance, and work satisfaction. The PLS-SEM analysis has two phases: (1) the reflective measurement model; (i) reliability; (ii) internal consistency evaluated as Cronbach's alpha and composite reliability (CR), and (iii) convergence validity employ factor loadings and average variance extracted (AVE); and (iv) discriminant validity employ Heterotrait-Monotrait (HTMT), and (2) the structural model.

RESULTS

Common Method Variance

Measurement Common Method Variance (CMV) exists when the data collection process affects responses more than the constructs being measured, leading to possible biased results (Podsakoff et al., 2003). Harman's single-factor test revealed that a single factor accounted for 24.064% of the variance (less than the cut-off value of 50%), suggesting an appropriate CMV (Podsakoff et al., 2003).

Measurement Model Assessment

The reliability of the indicators was assessed through the factor loadings, whose values should exceed 0.708, indicating that the factor explains more than 50% of the indicator's variance (Hair et al., 2021). A few loadings, such as WL5, WL12, WS1, and WS2, were removed due to their values below 0.708. While there were some items with loadings lower than the 0.5 threshold, these were retained given that they were greater than the cut-off value for the deletion of single items (0.4). When calculating average variance extracted (AVE) scores, the AVE scores exceeded those of the demographics (Hair et al., 2021). Factor loadings are shown in Table 1.

Table 1 Factor loadings

Items	Work Performance	Work Risk	Work Satisfaction	Workload
WL1				0.597
WL10				0.762
WL11				0.448
WL13				0.763
WL14				0.683
WL2				0.769
WL3				0.742
WL4				0.721
WL6				0.666
WL7				0.758
WL8				0.714
WL9				0.851
WP1	0.623			
WP2	0.651			
WP3	0.793			
WP4	0.746			
WP5	0.678			
WP6	0.786			
WP7	0.771			
WR1		0.824		
WR2		0.845		
WR3		0.903		
WR4		0.905		
WS3			0.689	
WS4			0.581	
WS5			0.743	
WS6			0.798	
WS7			0.827	

The internal consistency was evaluated using composite reliability (CR), where reliability was higher (CR = 0.868 to 0.936). This was also validated by Cronbach's alpha coefficients of 0.798 to 0.916. Convergent validity, as indicated by AVE, had acceptable results, as all AVE values were higher than 0.5. The findings of indicator reliability, internal consistency, and convergent validity are displayed in Table 2. Discriminant validity was assessed through the use of the heterotrait-monotrait (HTMT) criterion to ensure that the constructs were distinct and that they captured different content (Kline, 2011); all HTMT estimates were lower than the recommended threshold of 0.85, as shown in Table 3.

Table 2 Results summary of measurement model

Variables	Cronbach's alpha>0.60	Composite reliability>0.70	AVE>0.50
Work performance	0.849	0.868	0.524
Work risk	0.896	0.936	0.757
Work satisfaction	0.798	0.866	0.537
Workload	0.916	0.906	0.508

Table 3 Discriminant validity (HTMT)

Variables	Work performance	Work risk	Work satisfaction	Workload
Work performance				
Work risk	0.364			
Work satisfaction	0.674	0.241		
Workload	0.163	0.223	0.207	

Structural Model Assessment

The structural model was then evaluated for potential collinearity, for predictive validity, and the relationships among constructs (Hair et al., 2021). Collinearity was assessed using the variance inflation factor (VIF). No serious collinearity was observed in the study results, with values ranging from 1.023 to 1.158, all of which were below the threshold (Hair et al., 2021), as shown in Table 4.

Table 4 Lateral collinearity assessment

Variables	Work performance	Work risk	Work satisfaction	Workload
Work performance				
Work risk	1.123		1.023	
Work satisfaction	1.158			
Workload	1.109		1.023	

For hypothesis testing, bootstrapping (5000 resamples) for direct effect revealed no statistically significant impact relationship was observed between workload and work performance ($\beta = -0.055$, $t = 0.976$, $p > 0.05$), supporting H1. The result indicated that a workload has an f^2 value of 0.005, indicating a very small effect size based on Cohen (1988). On the contrary, the results indicate a significant positive relationship between work risk and work performance ($\beta = 0.210$, $t = 3.802$, $p < 0.01$), which explains 42.3% of the variance in work performance. Thus, H2 was not supported. The R^2 value of 0.423 is above the 0.26 value, as Cohen (1988) suggested, indicating a substantial model. Moreover, the result indicated that a work risk has an f^2 value of 0.068, indicating a small effect size based on Cohen (1988). The Q^2 value for work performance is 0.202, indicating that the model has sufficient predictive relevance (Hair et al., 2021). Meanwhile, a significant negative relationship was found between workload and work satisfaction ($\beta = -0.271$, $t = 3.436$, $p < 0.01$), supporting H3. The result indicated that a workload has an f^2 value of 0.083, indicating a small effect size based on Cohen (1988). However, a significant positive relationship was found between work risk and work satisfaction ($\beta = 0.294$, $t = 4.157$, $p < 0.01$), which explains 13.6% of the variance in work satisfaction. Thus, H4 was not supported. The R^2 value of 0.136 is above the 0.13 value, as Cohen (1988) suggested, indicating a moderate model. Moreover, the result indicated that a work risk has an f^2 value of 0.098, indicating a small effect size based on Cohen (1988). The Q^2 value for work performance is 0.053, indicating that the model has sufficient predictive relevance (Hair et al., 2021). Furthermore, work satisfaction was found to have a significant positive relationship with work performance ($\beta = 0.554$, $t = 11.345$, $p < 0.01$), supporting H5. The result indicated that work satisfaction has an f^2 value of 0.459, indicating a substantial effect size based on Cohen (1988). Figure 2 and Table 5 present the results.

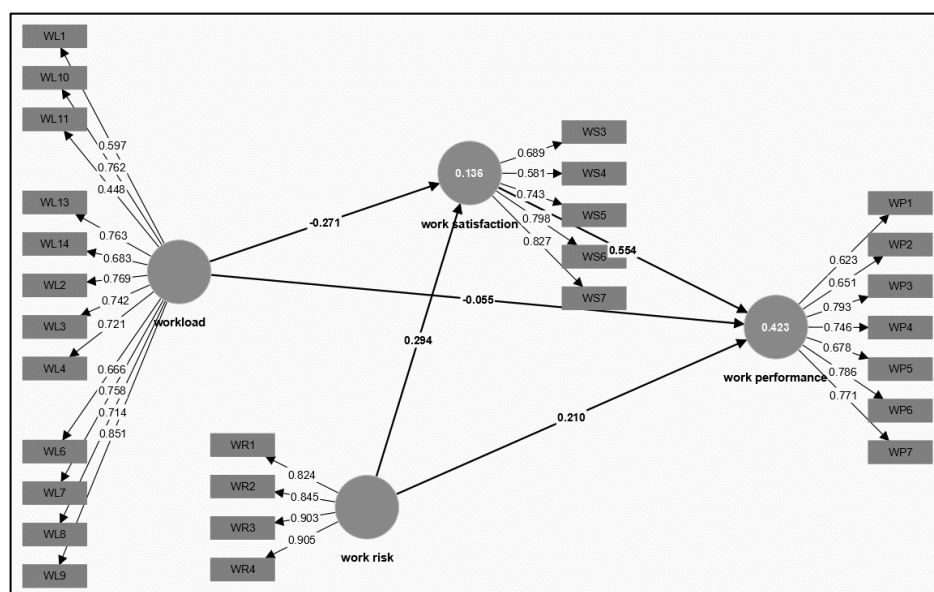


Figure 2 Path Analysis

Table 5 Results summary of structural model

H	Structural path	Path coefficients	T-values	Hypothesis supported	R ²	f ²	Q ²
H1	Workload → Work performance	-0.055	0.976	unsupported		0.005	
H2	Work risk → Work performance	0.210	3.802***	unsupported	0.423	0.068	0.202
H3	Workload → Work satisfaction	-0.271	3.436***	supported		0.083	
H4	Work risk → Work satisfaction	0.295	4.157***	unsupported	0.136	0.098	0.053
H5	Work satisfaction → Work performance	0.554	11.345***	supported		0.459	
H6	Workload → Work satisfaction → Work performance	-0.150	3.270***	supported			
H7	Work risk → Work satisfaction → Work performance	0.163	3.633***	unsupported			

Note(s): *p < 0.10, **p < 0.05, ***p < 0.01.

Meanwhile, for mediation analysis, the results indicate that the indirect effect of workload on work performance, mediated by work satisfaction, is a significant negative relationship ($\beta = -0.150$, $t = 3.270$, $p < 0.01$), supporting H6. In contrast, the indirect effect of work risk and work performance, mediated by work satisfaction, is a significant positive relationship ($\beta = 0.163$, $T = 3.633$, $p < 0.01$), rejecting H7.

DISCUSSION

Our findings suggest that workload did not significantly affect work performance, challenging past studies (Herdiana and Sary, 2023; Zamri et al., 2024) that identified it as a key factor. In Sabah's firefighters, factors like team cohesion, leadership, and access to job resources helped mitigate the negative effects of heavy workloads. Contrary to our hypothesis, work risk positively impacted performance. From the challenge demands perspective, high-risk tasks can be motivating when viewed as opportunities for growth rather than threats. In firefighting, work risk may enhance performance by providing opportunities for skill development and mastery. According to the JD-R model, when job demands like work risk are balanced with sufficient job resources (e.g., training, support, leadership), they can lead to increased engagement and better performance (Bakker and Demerouti, 2017).

The results also showed that workload negatively impacted work satisfaction. Firefighters in Malaysia often face high-risk, high-stress environments that increase workload and stress (Samsudin et al., 2021). Excessive workload typically decreases satisfaction, causing burnout and reduced motivation (Herdiana and Sary, 2023; Kumar and Mini, 2023; Kim and Yeo, 2024). The JD-R model suggests that high workload, without sufficient resources, leads to strain and lower satisfaction (Bakker and Demerouti, 2007; Schaufeli and Bakker, 2004). However, we found that work risk positively influenced satisfaction, suggesting that some high-risk jobs, with adequate resources, may view demands as challenges (Bakker and Demerouti, 2017), which aligns with recent studies (Chow and Cheak, 2023; Kim et al., 2024).

Additionally, greater work satisfaction was linked to higher performance among firefighters in Sabah, consistent with research showing that satisfied employees are more committed and productive (Arifin et al., 2019; Chowhan and Pike, 2023). While workload did not directly affect performance, work satisfaction acted as a mediator. Prolonged exposure to high workloads without recovery can reduce satisfaction (Bakker and Demerouti, 2017), which in turn negatively impacts performance. Contrary to our hypothesis, work satisfaction plays a crucial role in mediating the positive relationship between workload and performance in high-demand jobs like firefighting, where a sense of purpose increases satisfaction and performance (LePine, 2022; Mauno et al., 2024).

Theoretical and Practical Implications

This study contributes to theoretical development by extending the JD-R model in the high-risk occupational setting of Malaysian firefighters in Sabah State. The findings illustrate that work satisfaction functions as a key mediating mechanism through which workload and work risk influence work performance. Contrary to traditional assumptions that high demands universally lead to strain and reduced outcomes, the study supports the notion that such demands, when perceived as challenge demands, can foster positive motivational states that enhance satisfaction and, in turn, improve performance. This contributes to refining the JD-R model by underscoring the contextual relevance of job demand appraisals and the central role of intrinsic work attitudes,

thereby offering a more nuanced understanding of how complex job demands can simultaneously serve as stressors and motivators in high-stakes environments.

This study provides practical contributions for organisational leaders, human resource practitioners, and policymakers within the fire and rescue services in Sabah. Organisational leaders could foster a supportive environment by recognizing the motivational potential of workload and work risk, providing recognition, and ensuring professional growth opportunities. HR practitioners could focus on workload management to prevent burnout, implement resilience training, and enhance job satisfaction through recognition programs and mental health support. Policymakers in the Fire and Rescue Department Malaysia could focus on fair workload distribution, flexible scheduling, and adequate resources for training, safety, and mental health support. Continuous training, proper safety equipment, and psychosocial resources are essential for reducing stress and enhancing performance. These measures will improve firefighter well-being and job effectiveness, leading to a more resilient workforce.

Limitations and Future Research

This study has several limitations that should be addressed in future research. First, the sample is limited to firefighters in Sabah, which may not fully represent firefighters across other regions of Malaysia or different high-risk professions. Future studies could expand the sample to include a more diverse range of emergency services to enhance generalizability. Additionally, the cross-sectional design of this study limits the ability to establish causal relationships between workload, work risk, work satisfaction, and work performance. Longitudinal studies could provide deeper insights into how these factors evolve and influence long-term performance outcomes. Future studies should explore alternative mediators, such as emotional resilience or job resources, and consider how individual differences, like personality traits or coping styles, may moderate the relationship between job demands, satisfaction, and performance. Lastly, future studies may explore cross-cultural comparisons within ASEAN to understand better how cultural differences influence firefighter performance. Such research could highlight region-specific factors, leading to more tailored policies and interventions across different ASEAN countries.

CONCLUSION

This study contributes to understanding the effect of workload and work risk on work performance through work satisfaction as a mediating factor among the firefighters in Sabah. The results indicate that workload does not have a direct effect on performance; however, it does have an adverse impact on work satisfaction, which can either reduce or augment work performance depending on the amount experienced. On the other hand, work risk positively contributes to satisfaction and performance, indicating that some job demands may be experienced as challenging, supported by resources. The fundamental relevance of work satisfaction highlights how it helps protect against the negative outcomes of high workload and enhances the beneficial effects of meaningful job challenges. These findings not only broaden the boundaries of the JD-R model in high-risk work settings but also provide implications for organizational well-being and performance.

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