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Transformational Leadership as a Job Resource in Healthcare Service Systems: Evidence from Hospitals in Yemen

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Abstract. The resilience of healthcare service systems in conflict-affected contexts depends critically on employee performance to sustain service continuity under extreme operational pressure. Drawing on the Job Demands–Resources (JD-R) model and service science, this study conceptualizes hospitals as complex service systems and examines transformational leadership as a bundle of job resources that buffer excessive job demands and support service delivery. Survey data were collected from 228 employees across private hospitals in Yemen and analyzed using covariance-based structural equation modeling (CB-SEM). The results show that inspirational motivation ($\beta = 0.287$, $p = 0.032$) and individualized consideration ($\beta = 0.298$, $p = 0.029$) have significant positive effects on employee performance, jointly explaining 38% of its variance. In contrast, idealized influence and intellectual stimulation do not exhibit significant direct effects.

These findings indicate that, in crisis-affected healthcare service systems, leadership behaviors that provide a shared sense of purpose and individualized support function as critical coordinative and motivational resources, whereas charismatic role modeling and cognitive stimulation are less salient under conditions of extreme demand. By integrating leadership theory with the JD-R model and a service-system perspective, this study contributes to service science by identifying which leadership resources most effectively sustain human performance and operational resilience in fragile healthcare systems. The results offer evidence-based guidance for healthcare service management, highlighting targeted leadership development as a strategic intervention to stabilize workforce performance and maintain service continuity in conflict settings.

Keywords: Transformational Leadership, Healthcare Service Systems, Job Demands–Resources (JD-R) Model, Employee Performance, Service Operations and Resilience, Crisis-Affected Service Systems

1. Introduction

The effective functioning of healthcare systems, particularly when viewed as complex service systems, is fundamentally dependent on a stable, skilled, and highly motivated workforce. In environments of extreme duress, such as those experiencing prolonged conflict, the operational and psychological demands placed on healthcare professionals intensify, making their performance and retention critical not only to patient outcomes but also to service continuity and system resilience (World Health Organization, 2019). The ongoing humanitarian crisis in Yemen epitomizes such an environment, resulting in severe degradation of healthcare infrastructure, a critical shortage of medical staff, an overwhelming disease burden, and deteriorating working conditions (El Beheraoui et al., 2020). This context has created a significant and dangerous imbalance between immense job demands and available job resources, leading to burnout, high turnover, and compromised service quality (Iskandar, 2021). This extreme environment tests not only operational resilience but also the core humanistic foundations of care. The expression and sustainability of essential values like compassion in healthcare are profoundly shaped by cultural and systemic factors, including leadership and organizational support (Poudel et al., 2025), underscoring the critical role of the work environment shaped by leadership.

Within this challenging context, leadership emerges as a paramount strategic and coordinative resource, not merely an administrative function. Transformational leadership, characterized by inspiring motivation, intellectual stimulation, individualized consideration, and idealized influence (Bass & Avolio, 1994), is posited as a powerful style for fostering resilience, engagement, and adaptive capacity within teams in crisis situations. Its critical protective role is corroborated by international evidence; for instance, a study during the COVID-19 pandemic found that positive physician leadership was associated with a 31% decrease in the likelihood of burnout and increased organizational satisfaction (Spig et al., 2025). This supports the premise that in high-stress environments like Yemen, leadership acts as an indispensable buffer against extreme job demands. However, while bibliometric analyses confirm transformational leadership and employee well-being as a central research domain in global healthcare (Luo, Khatibi, & Kassim, 2023), the mechanisms through which its specific dimensions operate within the extreme, resource-constrained context of an active conflict zone remain underexplored. Crucially, there is a need to examine this relationship through an integrated lens that combines leadership theory with service science, viewing hospitals as systems where logistics, informatics, and human factors converge.

This study is therefore underpinned by the Job Demands-Resources (JD-R) model (Bakker & Demerouti, 2007), which provides a robust framework for this investigation. The model categorizes workplace factors into job demands (e.g., high workload, emotional strain), which deplete energy and lead to exhaustion, and job resources (e.g., social support, autonomy, leadership), which are functional in achieving goals, reducing the impact of demands, and stimulating motivation and engagement. The JD-R model posits that resources are particularly vital in mitigating the depleting effects of high demands. In this study, we position the dimensions of transformational leadership as critical social and organizational job resources within the hospital service system.

We conceptualize transformational leadership in Yemeni hospitals as a vital resource bundle. Leaders who provide inspiration, intellectual challenge, and personalized support can help replenish employees' motivational and emotional reserves. This study proposes that specific leadership dimensions' act as resources that initiate the JD-R's motivational pathway, thereby fostering improved employee performance and contributing to more robust service processes. Furthermore, it seeks to bridge leadership theory with service operations by exploring how these behaviors influence coordination, communication, and service delivery resilience under crisis conditions.

Therefore, given the critical role of healthcare workers, this study investigates the impact of transformational leadership on employee performance in Yemeni hospitals through the integrated lens of the JD-R model and service system theory. By identifying which leadership behaviors serve as the most effective system-level resources in a crisis, this research aims to provide evidence-based strategies

to increase staff resilience, maintain care quality and flow, and ensure workforce retention amidst unprecedented challenges.

2. Literature Review and Theoretical Framework

This chapter establishes the study's conceptual foundation. It begins by presenting the job demands-resources (JD-R) model as the primary theoretical lens. It then reframes the research context by conceptualizing hospitals as complex service systems to align with the scope of service science. Finally, it synthesizes these perspectives to position transformational leadership dimensions as critical job resources within such systems, leading to the development of specific, contextually informed hypotheses.

2.1. Theoretical Foundation: The Job Demands-Resources (JD-R) Model

This study is theoretically anchored in the job demands-resources (JD-R) model, a robust framework for understanding employee well-being and performance (Bakker & Demerouti, 2007). The model categorizes all work characteristics into two broad categories:

Job demands: These are the physical, psychological, social, or organizational aspects of a job that require sustained effort and are associated with physiological or psychological costs. Chronic high demands may lead to exhaustion and burnout (Demerouti et al., 2001). The context of Yemeni hospitals—marked by extreme pressure, resource scarcity, and conflict—epitomizes an environment of severe and multifaceted job demands. Such demands, particularly those related to psychological stress and trauma, are recognized as major determinants of health and productivity in the workplace literature, imposing significant economic and human costs on organizations (Burinskienė et al., 2024).

Job resources: These are aspects of the job that are functional in achieving work goals, reduce the negative impact of demands, and stimulate personal growth and development (Bakker & Demerouti, 2007).

The JD-R model proposes two psychological processes: a health impairment process triggered by excessive demands and a motivational process fuelled by the availability of resources. A central tenet is the buffering hypothesis, which posits that job resources can mitigate the depleting effects of high job demands. This buffering effect is empirically supported in healthcare settings. For instance, research in a public hospital demonstrated that effective leadership significantly moderates the positive relationship between workload and work stress among nurses, confirming leadership's role as a critical buffer against the health-impairment pathway (Kosashi et al., 2024). Resources become particularly salient and motivational in high-demand contexts. This study leverages this premise, examining transformational leadership as a potential bundle of resources within an extremely high-demand setting.

2.2. Research Context: Hospitals as Healthcare Service Systems

This study explicitly conceptualizes hospitals as complex healthcare service systems. This perspective is crucial for several reasons:

It shifts the analytical focus from viewing employee performance as an isolated outcome to recognizing it as a critical throughput within a service value chain. Performance directly influences service quality, continuity, and overall system resilience.

Effective service delivery results from the integration of logistics (e.g., supply chains, patient flow), informatics (e.g., communication, data coordination), and human factors.

Consequently, leadership within such a system must be analyzed not only as an interpersonal influence but also as a coordinative and enabling mechanism that optimizes these integrated components, especially under stress.

This service systems perspective is critical for understanding how leadership functions not only as an interpersonal influence but also as a coordinative mechanism that integrates logistics, information flow, and human resources to maintain service continuity and resilience under stress.

2.3. Transformational leadership as a critical job resource

Within the synthesized JD-R and service system framework, transformational leadership is conceptualized as a vital social and organizational job resource. Leaders exhibiting transformational behaviors provide followers with resources such as inspiration, support, intellectual challenges, and a sense of purpose, which can initiate the JD-R model's motivational pathway (Schaufeli & Bakker, 2004). The effective delivery of these resources, particularly the supportive behaviors encapsulated in Individualized Consideration, may be underpinned by a leader's broader interpersonal competency. Research indicates that a leader's emotional intelligence—the ability to perceive, understand, and manage emotions—is a significant factor that enhances employee performance, often by improving the quality of the work environment and employee satisfaction (Yusniar, Syaifuddin, & Situmorang, 2025). This suggests that emotional intelligence could serve as a foundational capacity enabling leaders to more effectively deploy transformational resources, especially in high-stress contexts where empathetic support is crucial. It is important to note that transformational leadership is one of several leadership paradigms demonstrating significant positive impact in healthcare. Recent research on Turkish doctors, for instance, shows that servant leadership—a style centered on supporting and empowering employees—also positively affects key outcomes like job satisfaction and work engagement, primarily by enhancing employees' person-job fit (Arıcıoğlu & Timuroğlu, in press). This underscores that leadership which prioritizes follower development and needs can be a potent motivational and stabilizing resource in demanding healthcare environments, complementing the resource-based view of leadership presented in this study."

The four dimensions, as defined by Bass and Avolio (1994), represent distinct types of resources that leaders can deploy:

Inspirational Motivation: Acts as a motivational and purposive resource by articulating a compelling vision that is directly relevant to sustaining a shared service mission.

Individualized Consideration: Functions as a social-support and developmental resource through empathy and personal attention, which are crucial for buffering emotional exhaustion.

Idealized influence: This influence serves as a charismatic and role-modeling resource.

Intellectual Stimulation: Operates as a cognitive and innovation-oriented resource.

This conceptualization is supported by broader service science literature, where leadership is systematically identified as a critical coordinative mechanism that integrates human and operational resources to achieve performance excellence (Fok-Yew & Kassim, 2025). Furthermore, the positive relationship between transformational leadership and organizational effectiveness is robustly evidenced across various service-oriented sectors, as confirmed by large-scale meta-analytic research (Huang & Hsin, 2023). The unique, high-stress context of Yemeni hospitals presents an "extreme case" for testing this theoretical integration. It allows for a critical investigation into which specific leadership resources are most salient and effective for sustaining performance when systemic demands are overwhelming. This approach moves beyond confirming a generic positive relationship to offering a contextually differentiated understanding of transformational leadership, thereby addressing the call for greater theoretical originality.

2.4. Synthesizing the Frameworks: An Integrated Perspective

This study is guided by an integrated conceptual perspective that positions transformational leadership dimensions as job resources within a high-demand healthcare service system. The core proposition is that these resources can buffer the negative impact of extreme job demands (as per the JD-R buffering hypothesis), thereby enhancing employee performance. Improved employee performance, in turn, is a fundamental driver of service system outcomes, such as reliability, responsiveness, and resilience.

This synthesis positions the research at the intersection of organizational behavior, occupational health psychology, and service science. It provides a clear rationale for examining the differential effects of leadership dimensions and forms the logical basis for the hypotheses developed in the subsequent section.

3. Hypothesis Development

On the basis of the integrated theoretical framework combining the job demands-resources (JD-R) model and a service systems perspective, this study proposes that transformational leadership functions as a critical bundle of job resources. In the extreme context of Yemeni hospitals—characterized by overwhelming job demands (e.g., workload, trauma, resource scarcity)—these resources are hypothesized to differentially influence the motivational and buffering pathways of the JD-R model, thereby enhancing employee performance and contributing to service system resilience. The following hypotheses reflect this contextual differentiation and the proposed asymmetrical salience of leadership resources under crisis conditions:

H1: Idealized influence does not have a statistically significant positive effect on improving employee performance in Yemeni hospitals.

Theoretical Justification (JD-R Pathway): Within a crisis service environment, employees' immediate focus is on survival, task completion, and securing basic resources. The charismatic role modeling of idealized influence may be perceived as a less tangible resource if it is not paired with direct support and tangible resources. Therefore, this dimension is not expected to function as a primary motivational resource for activating the JD-R motivational pathway under extreme duress, where practical support is paramount.

H2: Inspirational motivation has a statistically significant positive effect on improving employee performance in Yemeni hospitals.

Theoretical Justification (JD-R Pathway): This dimension is posited as a crucial motivational and directional resource. By articulating a compelling vision and linking daily efforts to a meaningful future purpose, leaders can replenish psychological resources, foster engagement, and maintain a focus on service continuity amidst chaos. This directly activates the motivational pathway of the JD-R model, helping to buffer exhaustion and sustain effort toward shared goals, which is essential for maintaining consistent service delivery.

H3: Intellectual stimulation does not have a statistically significant positive effect on improving employee performance in Yemeni hospitals.

Theoretical Justification (JD-R Pathway): The protocol-driven, urgent, and resource-scarce nature of clinical work in a crisis setting severely limits opportunities for creative problem solving and challenging the status quo. The cognitive resources of intellectual stimulation may thus have low salience or applicability for improving core task performance when the operational priority is reliability and adherence to essential procedures under pressure. It is less likely to serve as an effective buffering resource in this context.

H4: Individualized consideration has a statistically significant positive effect on improving employee performance in Yemeni hospitals.

Theoretical Justification (JD-R Pathway): This dimension is hypothesized to be a vital social support and stabilizing resource. In a high-stress environment, leaders who demonstrate empathy, provide personalized support, and attend to individual needs offer a powerful relational buffer against emotional exhaustion and burnout. This buffers the health impairment pathway by reducing emotional exhaustion, thereby stabilizing the human component of the service system and enhancing morale—a fundamental prerequisite for the operational integrity of any service system.

4. Methodology

4.1. Research Design and Service-System Context

This study employed a quantitative, cross-sectional, and explanatory research design to examine the effects of transformational leadership dimensions on employee performance within healthcare service systems operating under extreme job demands. Consistent with the Job Demands–Resources (JD-R)

framework, the study focuses on leadership behaviors as job resources that shape employee performance outcomes in a crisis-affected service environment.

Hospitals were conceptualized as complex healthcare service systems, in which employee performance represents a critical operational throughput influencing service continuity, reliability, and resilience. A cross-sectional design was deemed appropriate given the study's objective of testing theoretically specified relationships among leadership resources and performance outcomes within a clearly defined institutional and temporal context.

4.2. Population, Sampling Procedure, and Data Collection

The study population comprised doctors, technical staff (paramedical personnel), and administrative employees working in 13 private hospitals in Yemen, totaling 708 employees. These occupational groups were selected because they collectively represent the core human resources responsible for healthcare service delivery, coordination, and support functions within hospital service systems.

A stratified random sampling technique was applied to ensure proportional representation of each occupational group, thereby reducing sampling bias and improving the generalizability of the findings within the private healthcare sector. The required sample size was calculated using the Thompson formula for finite populations, which is suitable for survey-based research with a known population size.

A total of 249 questionnaires were distributed in person, and 235 questionnaires were returned, yielding a response rate of 94.4%. After screening for incomplete or invalid responses, 228 questionnaires were retained for analysis, resulting in a usable response rate of 91.6%. This sample size exceeds minimum requirements for covariance-based structural equation modeling (CB-SEM) given the complexity of the proposed model.

4.3. Measurement Instruments

All constructs were measured using validated multi-item scales, adapted to the healthcare and crisis context of Yemen. Responses were recorded on a five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree").

Transformational Leadership (Independent Variable). Transformational leadership was measured using the Multifactor Leadership Questionnaire (MLQ) developed by Bass and Avolio (1994). The instrument captures four distinct dimensions: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. This scale is widely validated in healthcare and service-sector research and is appropriate for modeling leadership behaviors as social and organizational job resources.

Employee Performance (Dependent Variable). Employee performance was measured using the 16-item scale developed by Williams and Anderson (1991), encompassing both task performance (in-role behaviors directly related to job responsibilities) and contextual performance (extra-role behaviors that support the social and psychological environment of the service system). This dual-dimensional measure aligns with service science by capturing both technical and relational aspects of performance critical to service continuity.

4.4. Data Analysis Strategy

Data analysis was conducted using SPSS version 28 and AMOS version 28 following a structured, multi-stage analytical procedure.

4.4.1. Justification for Covariance-Based Structural Equation Modeling (CB-SEM)

Covariance-based structural equation modeling (CB-SEM) was employed as the primary analytical technique for three reasons. First, the study aims to test a theoretically specified model grounded in the JD-R framework, making CB-SEM appropriate for confirmatory hypothesis testing. Second, all constructs are reflective and measured using well-established instruments, satisfying CB-SEM

assumptions. Third, the sample size (N = 228) meets recommended thresholds for CB-SEM given the number of latent variables and estimated parameters (Kline, 2016).

CB-SEM allows for the simultaneous estimation of measurement and structural models, enabling rigorous assessment of both construct validity and hypothesized causal relationships while accounting for measurement error.

4.4.2. Analytical Procedure

The analysis proceeded through the following steps:

1) Confirmatory Factor Analysis (CFA).
   CFA was conducted to validate the measurement models for transformational leadership and employee performance. Model fit was evaluated using multiple indices, including χ^2/df, CFI, GFI, NFI, TLI, and RMSEA. Convergent validity was assessed using standardized factor loadings (> 0.50), composite reliability (CR > 0.70), and average variance extracted (AVE > 0.50). Discriminant validity was evaluated using the Fornell–Larcker criterion.
2) Assessment of Normality and Data Suitability.
   Univariate normality was examined using skewness and kurtosis statistics, with values within acceptable ranges ($|Z| < 2$ for skewness and $|Z| < 7$ for kurtosis), supporting the use of CB-SEM.
3) Common Method Bias Diagnostics.
   To address potential common method bias arising from self-reported data, Harman's single-factor test was applied. The absence of a dominant single factor indicated that common method variance was unlikely to threaten the validity of the results.
4) Structural Model Estimation.
   The hypothesized paths between the four transformational leadership dimensions and employee performance were estimated using SEM. Path coefficients (β), standard errors, t-values, and p-values were examined to test hypotheses H1–H4. The explanatory power of the model was assessed using the coefficient of determination (R^2).

4.5. Ethical Considerations

Participation in the study was voluntary. Respondents were informed of the study's purpose and assured of confidentiality and anonymity. No identifying information was collected, and data were used solely for academic research purposes. All procedures adhered to accepted ethical standards for social science research.

5. Results

5.1. Sample characteristics

Among the 249 questionnaires distributed, 235 were returned (94.4% response rate). After 7 invalid responses were removed, 228 questionnaires were used for the final analysis (91.6% usable response rate). The demographic profile is presented in Table 1.

Table 1. Demographic characteristics of the study sample (N=228)

Variable	Scales	Number	Percentage (N=228)
Gender	Male	107	46.9
	Female	121	53.1
Age	Less than 30 years	40	17.5
	30 - 50 years	131	57.5
	More than 50 years	57	25.0
Education	Diploma or less	114	50.0
	Bachelors	88	38.6
	Masters	23	10.1
	Ph.D.	3	1.3
Experience	Less than 5	110	48.2
	5 – Less than 10 years	78	34.2
	10 –Less than 15 years	18	7.9
	More Than 15 years	22	9.6
Job Title	Administrative	52	22.8
	Doctor	74	32.5
	Technical	102	44.7

5.2. Measurement model, reliability, and validity

Confirmatory factor analysis (CFA) showed good fit for both measurement models after theoretically justified item deletion. The key fit indices are shown in Tables 2 and 3. Notably, the excellent fit indices for the transformational leadership scale (e.g., RMSEA=0.000) should be interpreted with caution, as they may indicate potential model saturation following theoretically guided item deletion. While the modifications improved model parsimony, future research should validate this refined measurement structure in independent samples.

Table 2. Goodness-of-fit Indices for the Transformational Leadership Scale

RMSEA	TLI	IFI	NFI	GFI	CFI	Chi-Square/ Df
0.000	1.009	1.006	0.960	0.970	1.000	0.873

Table 3. Goodness-of-fit Indices for the Employee Performance Scale

RMSEA	TLI	IFI	NFI	GFI	CFI	Chi-Square/Df
.041	.986	.993	.974	.984	.993	1.384

All the constructs demonstrated strong reliability, with composite reliability (CR) values > 0.70, and Convergent validity, with average variance extracted (AVE) values > 0.50 (Table 4). Discriminant validity was established via the Fornell–Larcker criterion

Table 4. Composite reliability (CR) and average variance extracted (AVE)

Dimensions	Number of paragraphs	CR	AVE
Ideal influence	3	0.77	0.53
Intellectual stimulation	3	0.83	0.62
Inspirational motivation	3	0.76	0.52
Individual consideration	3	0.81	0.60
Transformational leadership dimensions	12	0.94	0.57
Contextual performance	3	0.77	0.53
Task Performance	3	0.75	0.50

The data met univariate normality assumptions. The skewness and kurtosis statistics for all the study variables fell within acceptable ranges (skewness $|Z| < 2$, kurtosis $|Z| < 7$), supporting the assumption of univariate normality (Table 5).

Table 5. Testing the Normal Distribution of the Study Variables

Dimensions	Skewness			Kurtoses		
	Statisticall y	Erro r	Values Z	Statisticall y	Erro r	Values Z
Ideal influence	-.202-	.161	-1.25	-.125-	.321	-3.89
Intellectual stimulation	-.260-	.161	-1.61	-.284-	.321	0.88-
Inspirational motivation	-.272-	.161	-1.69	.180	.321	0.56
Individual consideration	-.275-	.161	-1.71	-.694-	.321	-2.16
Transformational leadership dimensions	-.149-	.161	-0.93	-.104-	.321	-0.32
Contextual performance	-.279-	.161	-1.73	-.489-	.321	-1.52
Task Performance	-.263-	.161	-1.63	-.248-	.321	-0.77
Employee Performance	-.313-	.161	-1.94	-.360-	.321	-1.12

5.3. Descriptive Statistics

The perceived levels of transformational leadership (Mean = 3.56, SD = 0.498) and employee performance (Mean = 3.91, SD = 0.510) were high. Among the leadership dimensions, inspirational motivation had the highest mean score (M = 3.67). See Table 6.

Table 6. Descriptive Statistics for the Transformational Leadership Dimensions and Employee Performance

N.	Dimensions	Arithmetic Mean	Standard deviation	Relative Significance	Degree of Agreement	Rank
1	Ideal influence	3.65	0.564	73	*high*	2
2	Intellectual stimulation	3.55	0.733	71	*high*	3
3	Inspirational motivation	3.67	0.632	73.4	*high*	1
4	Individualized consideration	3.39	0.735	67.8	*mild*	4
Arithmetic Mean of Transformational leadership dimensions		3.56	0.498	71.2	*high*	
5	Contextual performance	3.89	0.567	77.8	*high*	2
6	Task Performance	3.94	0.556	78.8	*high*	1
Arithmetic Mean of Employee Performance		3.91	0.510	78.2	*high*	

5.4. Hypothesis Testing (Structural Model)

The structural model showed a good fit (CMIN/DF = 1.542, CFI = 0.974, GFI = 0.951, RMSEA = 0.049). The model explained 38% ($R^2 = 0.38$) of the variance in employee performance. The results of the path analysis are summarized in Table 7.

Table 7. Results of structural equation modeling (path analysis)

Hypothesis	Path	β (Standardized Estimate	S.E.	T Value	P-Value	Supported
H1	Idealized influence---> Employee Performance	-.093	.065	-1.17	.240	No
H2	Inspirational motivation ---> Employee Performance	.287	.086	2.144	.032	Yes
H3	Intellectual stimulation ---> Employee Performance	-.069	.085	-.616	.538	No
H4	Individual consideration ---> Employee Performance	.298	.101	2.179	.029	Yes

6. Discussion

6.1. Interpretation of Findings through the JD-R and Service System Lenses

The results provide strong, nuanced support for the JD-R model within an extreme service system context and confirm the contextual differentiation of leadership resources proposed in the hypotheses.

Support for H2 and H4: The Salience of Motivational and Supportive Resources

The significant positive effects of inspirational motivation ($\beta = 0.287$, $p = 0.032$) and individualized consideration ($\beta = 0.298$, $p = 0.029$) validate their role as critical job resources. This finding aligns with contemporary research confirming the significant effect of transformational leadership on performance in service sectors of developing economies (Ha & Oanh, 2024).

As hypothesized, inspirational motivation served as a directional and motivational resource. By providing a compelling sense of purpose, it helps replenish psychological capital and maintain focus on service goals, thereby activating the JD-R model's motivational pathway. This mechanism is conceptually aligned with fostering work engagement—a state of vigor and dedication strongly linked to performance (Chahyono et al., 2024). Our findings suggest Inspirational Motivation may be a key leadership lever for triggering this engaged state even amidst crisis.

Individualized consideration functioned as a stabilizing social and emotional resource, buffering emotional exhaustion and fostering the commitment necessary for team cohesion and retention—a critical factor for system stability during crises (Malas et al., 2022). The efficacy of this dimension in our context may be driven by leaders' capacity for empathy and social skills, which are core components of emotional intelligence identified as critical for effective healthcare leadership (Alamari et al., 2025). This aligns with research showing that emotional leadership behaviors centered on empathy positively enhance group performance in service contexts (Jeong & Hong, 2024). Individualized consideration thus directly strengthens the relational buffer against extreme job demands.

Support for H1 and H3: The Diminished Salience of Charismatic and Cognitive Resources

The non-significant results for idealized influence ($\beta = -0.093$, $p = 0.240$) and intellectual stimulation ($\beta = -0.069$, $p = 0.538$) align with our hypotheses. In a survival-focused crisis where practical support and clear direction are paramount, charismatic role-modeling (H1) may be perceived as less immediately tangible or relevant. Similarly, the urgent, protocol-driven nature of clinical work in this setting (H3) likely constrains opportunities for the creative rethinking that Intellectual Stimulation promotes, rendering this cognitive resource less impactful for immediate performance. This finding powerfully underscores the contingent value of leadership resources, where their salience is mediated by acute situational demands.

6.2. Implications for Service System Management and Logistics

This study moves beyond confirming leadership effects to specify which leadership resources matter most for sustaining service operations under duress, these findings align with broader evidence linking leadership-driven organizational values to system-level outcomes. For instance, Kang et al. (2023) demonstrated that organizational values of excellence and innovation, often championed by leadership, significantly correlate with higher patient satisfaction across multiple service domains. This reinforces the notion that leadership behaviors such as inspirational motivation can serve as a coordinative mechanism that aligns team efforts with service excellence, even in crisis settings like Yemen. Offering targeted insights for service system design.

For Service Coordination and Logistics: Leaders strong in inspirational motivation enhance strategic alignment and workflow coordination by ensuring all team members are focused on a common, adaptive service mission. This optimizes resource allocation and patient flow under severe constraints, acting as a crucial coordinative mechanism.

For Human Resource Logistics in Healthcare: The power of individualized consideration underscores that staff support is a core operational priority, not a secondary concern. This translates into necessary investments in psychosocial support systems, fair scheduling logistics to prevent burnout,

and fostering team environments that protect the system's human infrastructure—a key asset for service continuity.

For Information Flow, Communication, and Informatics: Both effective leadership dimensions rely on and reinforce robust communication channels. This highlights the need for service system designs that facilitate clear top-down communication of vision and empathetic bottom-up feedback loops. Research confirms that leadership promoting transparent internal communication is a critical enabler of knowledge sharing and operational coordination (Al Tounsi et al., 2022). Our findings underscore that technological integration, such as the structured Health Information Systems advocated for building integrated health systems (Pillay et al., 2025), must be complemented by leadership that ensures these channels are used to motivate and support staff effectively, especially during crises.

Cross-Paradigm Insights for Adaptive Systems: The focus on specific transformational resources aligns with principles from other leadership paradigms relevant to complex systems. For instance, research on Inclusive Leadership shows its power to foster open communication and proactive employee behavior by strengthening positive exchange norms (Ahmed, 2024). This points to a common principle: effective leadership in high-stress service environments often operates by creating a resource-rich social fabric that enables the adaptive employee behaviors necessary for system resilience and performance.

6.3. Theoretical Contribution and Future Research

This research contributes by contextualizing and refining the JD-R model, demonstrating that not all potential resources are equally effective under extreme demands. It provides a framework for predicting which leadership behaviors will be most salient in crisis service systems.

Future research should build on this by employing longitudinal designs to test causality. It should also integrate direct service system performance metrics (e.g., patient flow efficiency, medication error rates) to create a stronger empirical link between leadership, employee performance, and tangible system outcomes. Furthermore, studies should explore how these leadership resources interact with other system components, such as supply chain robustness, to construct comprehensive models of healthcare service system resilience.

7. Conclusion

This study examined the role of transformational leadership in sustaining employee performance within crisis-affected healthcare service systems, using the Job Demands–Resources (JD-R) model and a service science perspective. The findings demonstrate that transformational leadership functions as a differentiated bundle of job resources rather than a uniform influence. Specifically, inspirational motivation and individualized consideration emerged as the most salient leadership resources, significantly enhancing employee performance by supporting motivation, emotional stability, and coordinated service delivery under extreme job demands. In contrast, idealized influence and intellectual stimulation showed no significant direct effects, suggesting that their value diminishes in environments where immediacy, reliability, and personal support are paramount.

The primary theoretical contribution of this study lies in refining the JD-R model within an extreme service-system context. By identifying which leadership dimensions effectively buffer excessive demands, the study advances a contingency-based understanding of leadership as a service-system resource rather than a universally effective behavioral style. This contributes to service science by linking leadership behaviors to the stability and resilience of human resources that underpin service operations.

From a practical perspective, the results highlight that leadership development in crisis-affected healthcare systems should prioritize inspirational communication and individualized support as core operational capabilities. These behaviors are not peripheral soft skills but essential mechanisms for maintaining workforce performance and service continuity.

Future research should employ longitudinal and multi-source designs to establish causal relationships and integrate objective service-system indicators, such as patient flow or care continuity, to strengthen the link between leadership resources and system-level outcomes. Extending this framework to other fragile or resource-constrained service systems would further enhance its generalizability and relevance to service science and operations management.

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