Designing a Digital Mentoring Model to Enhance Organizational Resilience in Energy Service Companies: A Pathway Toward Smart Process Transformation

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Abstract

This study aims to design and validate a digital mentoring model that enhances organizational resilience in energy service companies. A mixed-methods exploratory design was employed, integrating qualitative interviews and quantitative modeling. In the qualitative phase, semi-structured interviews were conducted with 15 experts in human resources, information technology, and organizational development, and the data were analyzed using thematic analysis in MAXQDA 2022. The quantitative phase utilized a researcher-developed questionnaire based on qualitative findings and was distributed to 130 randomly selected employees of the National Gas Company of Kerman Province. Measurement and structural models were assessed using PLS-SEM in SmartPLS 4, with reliability, convergent validity, and model-fit indices evaluated according to accepted thresholds. Inferential results showed that digital mentoring exerted a strong and significant direct effect on smart learning ($\beta = 0.67$, $t = 12.84$, $p < 0.001$). Smart learning significantly predicted organizational resilience ($\beta = 0.59$, $t = 10.47$, $p < 0.001$). An indirect mediation effect indicated that digital mentoring influenced organizational resilience through smart learning ($\beta = 0.39$, $t = 3.98$, $p < 0.01$). Digital transformational leadership demonstrated a significant moderating effect, strengthening the relationship between digital mentoring and resilience ($\beta = 0.21$, $t = 2.06$, $p < 0.05$). Model-fit indices supported the robustness of the structural model, including SRMR = 0.046, NFI = 0.91, and R^2 values of 0.45 for smart learning and 0.54 for resilience. Digital mentoring functions as a strategic learning and development mechanism that enhances resilience by improving adaptive learning capability, strengthening digital readiness, and enabling more effective leadership support. The validated model demonstrates that integrating digital mentoring into organizational development strategies can significantly reinforce resilience in technology-driven service environments.

Keywords: digital mentoring, organizational resilience, smart learning, digital transformation, energy service companies

How to cite this article:
Abousaeidi, H., Salajegheh, S., Fatehirad, N., & Kamali, M. J. (2026). Designing a Digital Mentoring Model to Enhance Organizational Resilience in Energy Service Companies: A Pathway Toward Smart Process Transformation. Management Strategies and Engineering Sciences, 8(4), 1-9.

1.   Introduction

The rapid acceleration of digital transformation across industries has reshaped the foundations of organizational learning, workforce development, and resilience-building mechanisms. In contemporary service-oriented sectors, especially energy-related organizations that rely heavily on knowledge-intensive operations, the integration of digital technologies with human resource development has become a strategic necessity. Digital mentoring, as part of this evolution, offers an adaptive, technology-driven framework for enhancing learning, engagement, and professional growth. The growing reliance on virtual collaboration, distributed teams, real-time learning analytics, and AI-enhanced coaching tools reflects a broader paradigm shift toward hybrid and digitally mediated organizational environments. This shift requires rethinking traditional mentoring structures and exploring how digital ecosystems can support employee adaptability and long-term organizational resilience.

The literature on digital mentoring demonstrates that virtual mentoring systems are no longer supplementary

supports but key enablers for fostering leadership, continuous learning, and professional development. Studies emphasize that mentoring, coaching, and advising in digital spaces can significantly strengthen individual learning pathways and leadership capacities when appropriately designed and contextualized [1]. These digital spaces empower employees to personalize learning, access mentors across geographical boundaries, and participate in dynamic feedback loops that were traditionally limited by face-to-face constraints. The evolution of digital mentoring practices is evident in the education and professional development sectors, where new models highlight opportunities for cross-cultural learning, scalability, and enhanced teacher development [2]. Collectively, these studies reinforce the idea that mentoring is increasingly aligned with digital affordances, making it essential for both employee development and organizational transformation.

Digital mentoring platforms also serve as powerful tools for entrepreneurial and organizational learning. Research shows that digital platforms can significantly enhance entrepreneurial support, knowledge sharing, and learning outcomes when they incorporate interactive guidance from mentors and peers [3]. Furthermore, online mentoring has been demonstrated to influence career progression and mitigate plateau effects, especially in organizations where career mobility depends on dynamic skill development and adaptive learning [4]. These findings suggest that digital mentoring is not merely a technological enhancement but a pathway to addressing deeper organizational challenges, such as disengagement, stagnation, and limited developmental resources. In multicultural and youth-focused contexts, digital mentoring platforms have been shown to support inclusion, communication, and cross-cultural understanding—elements that contribute indirectly to organizational cohesion and resilience [5]. Through these perspectives, digital mentoring emerges as a multidimensional mechanism supporting both individual growth and collective organizational capacity.

The concept of organizational resilience has concurrently gained prominence as organizations face increasing uncertainty driven by global crises, technological disruptions, and rapidly changing competitive landscapes. Organizational resilience is commonly defined as the capacity of an organization to absorb shocks, adapt to changing environments, and sustain operations under conditions of stress. Recent empirical research underscores the significance of organizational resilience for business continuity, especially for small and medium-sized

enterprises (SMEs) engaged in international or volatile markets [6]. Resilience enables firms to remain competitive by strengthening proactive adaptation mechanisms and mobilizing resources during environmental challenges. A growing stream of literature connects resilience with psychological and entrepreneurial dimensions, showing that entrepreneurs' personal resilience and the psychological characteristics of employees play substantial roles in how organizations collectively withstand disruptions [7]. These studies highlight the psychological, relational, and structural foundations of resilience, affirming its multidimensional nature within modern organizational contexts.

Within the broader conceptual landscape, corporate sustainability research also acknowledges resilience as a crucial component of long-term strategic success. Reviews of academic traditions reveal that sustainability agendas and resilience-building efforts are often intertwined, with corporate purpose influencing an organization's ability to adapt, innovate, and remain responsive to stakeholder needs [8]. Resilience is not only about survival but about sustaining performance through continuous learning and a strong organizational identity. Complementary studies in strategic human resource management emphasize that employees' resilience is an important mediating factor linking organizational innovation and HRM practices to overall organizational resilience [9]. These findings signal that resilience operates at multiple levels: individual, team, and organizational. Thus, any approach to fostering organizational resilience must account for mechanisms that influence learning behaviors, adaptive thinking, and knowledge-sharing cultures.

Digital resilience, as a more specialized area of investigation, highlights the importance of technology-adaptability, information security, and digital infrastructure in supporting organizational continuity. Emerging frameworks suggest that cyber resilience, in particular, requires a strategic blend of technological, cultural, and governance components to prepare organizations for digital disruptions and cyber threats [10]. In energy-related service organizations, where the integrity of digital systems is critical to safety and operational reliability, cyber resilience is closely tied to employee competencies, digital literacy, and learning agility. These interdependencies reinforce the need for organizations to implement robust training and mentoring systems that enhance readiness for technological change.

Resilience is also influenced by workplace culture and employee performance systems. Studies exploring

workplace resilience demonstrate that organizational culture significantly predicts resilience levels among employees, with resilient individuals contributing to stronger performance outcomes and more cohesive organizational dynamics [11]. Other research identifies resilience, agility, and collectivism as predictors of employees' subjective well-being, emphasizing that resilient employees foster more productive and psychologically safe work environments [12]. These findings collectively highlight the importance of aligning mentoring, learning, and support systems with employees' psychological needs to improve organizational resilience.

In addition, scholars emphasize the role of adjustment tendencies, psychological well-being, and adaptability during transitions, which are critical dimensions of human behavior that influence learning and resilience. Research on student transitions suggests that resilience and psychological well-being mediate adjustment processes, contributing to more adaptive responses in new or uncertain environments [13]. These insights extend into organizational contexts, suggesting that employees undergoing technological or structural transitions may benefit from support systems—such as digital mentoring—that facilitate adaptation and preserve well-being during change.

Research in top management team (TMT) diversity further demonstrates that organizational environment conditions and leadership composition significantly shape corporate resilience [14]. Diverse leadership teams tend to respond more flexibly to changing external conditions, drawing on a broader set of perspectives and experiences. This aligns with studies emphasizing that resilience is strengthened when organizations foster collaborative learning environments supported by digital technologies that democratize access to knowledge. Therefore, the aim of this study is to design a digital mentoring model that enhances organizational resilience in energy service companies.

2. Methodology

This research employed an applied mixed-methods design that combined qualitative exploration with quantitative validation to develop a digital mentoring model aimed at enhancing organizational resilience in energy service companies. The qualitative phase drew upon a targeted group of experts in human resource management, information technology, and organizational development within the energy industry. A total of 15 senior managers, department heads, and specialists with more than 15 years of professional experience were selected through purposeful sampling, ensuring that participants possessed deep insight into digital learning, technological change, and organizational resilience. In the quantitative phase, the statistical population consisted of all administrative employees of the National Gas Company of Kerman Province, totaling approximately 350 individuals. Using the Cochran formula, a sample of 130 participants was randomly selected to represent the broader employee population and provide empirical data for validating the conceptual model derived from the qualitative findings.

Data were collected through two complementary tools, aligned with the sequential exploratory design of the study. In the qualitative phase, semi-structured interviews served as the primary instrument. These interviews were guided by open-ended questions focusing on participants' experiences with digital mentoring in the workplace, the role of technology in employee learning and development, and mechanisms through which organizational resilience improves in response to technological disruptions. All interviews were audio-recorded, transcribed, and subjected to thematic analysis using MAXQDA 2022, following the six-step framework proposed by Braun and Clarke (2021). This phase allowed for the extraction of key themes and constructs that informed the subsequent development of the quantitative instrument.

In the quantitative phase, a researcher-developed questionnaire grounded in the qualitative themes was used for data collection. The questionnaire incorporated four major scales: digital mentoring, encompassing dimensions such as technological interaction, intelligent feedback, and collaborative learning; smart organizational learning, including adaptive, data-driven, and participatory learning components; organizational resilience, operationalized through flexibility, foresight, and recovery capability; and digital transformational leadership, included as a mediating variable. All items were measured on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Content validity was assessed through expert review by academic scholars and senior managers, resulting in acceptable content validity ratio (CVR) values exceeding 0.79. Reliability was examined through Cronbach's alpha and composite reliability, both of which indicated strong internal consistency, with all constructs scoring above 0.8.

Data analysis followed the logic of the mixed-methods approach, with qualitative insights providing the foundation for quantitative model testing. In the qualitative phase, interview transcripts were coded through open, axial, and

selective coding procedures, which facilitated the identification of 55 key codes distributed across three overarching thematic categories. These categories shaped the conceptual structure of digital mentoring and its relationship with resilience and learning in the organizational context. In the quantitative phase, the dataset collected from the questionnaire was analyzed using SmartPLS 4. Partial Least Squares Structural Equation Modeling (PLS-SEM) was employed due to its suitability for exploratory modeling, complex constructs, and prediction-oriented analysis.

3. Findings and Results

The findings of the study are presented in two complementary phases. The qualitative phase includes all 55 open codes extracted through thematic analysis, organized under subthemes and the three main themes. The quantitative phase reports descriptive statistics, reliability and validity indicators, model-fit indices, and the full pattern of structural effects.

Table 1. Main Themes, Subthemes, and Open Codes Extracted from Qualitative Analysis

Main Theme	Subthemes	Open Codes (55 Codes in English)
Digital Mentoring	Platform-Based Training	DM1– Intelligent learning platform; DM2– Online access to content; DM3– Interactive training modules; DM4– Needs-based training; DM5– Time-independent access; DM6– Video-based guidance; DM7– Modular structure; DM8– Personalized learning paths; DM9– Self-archiving of knowledge; DM10– Basic digital-skill enhancement
	Networked Learning	DM11– Employee network learning; DM12– Virtual learning groups; DM13– Online experience exchange; DM14– Cross-department communication; DM15– Participation in learning communities; DM16– Digital discussion rooms; DM17– Co-creation of knowledge; DM18– Social learning; DM19– Interactive webinars; DM20– Shared professional files
	Collaborative Interaction	DM21– Peer feedback; DM22– Digital peer mentoring; DM23– Two-way mentor–employee interaction; DM24– Real-time performance support; DM25– Continuous progress monitoring; DM26– Chat-based coaching; DM27– Online troubleshooting; DM28– Rapid response; DM29– Professional–psychological support; DM30– Multimedia interactions
Smart Learning	Learning Analytics	SL1– Performance data analytics; SL2– Learning dashboards; SL3– Weakness detection; SL4– Intelligent content recommendation; SL5– Analysis of educational patterns; SL6– Learner analytic profiling; SL7– Progress notification; SL8– Automated monitoring; SL9– Real-time reports; SL10– Adaptive learning algorithms
	Rapid Feedback	SL11– Instant feedback; SL12– Error analysis; SL13– Automated scoring; SL14– Test-based learning; SL15– Rapid feedback cycle; SL16– Motivational messages; SL17– Immediate performance corrections; SL18– Online task review
	Self-Learning	SL19– Self-directed learning; SL20– Learner-selected learning path; SL21– Intelligent exercises; SL22– Full content accessibility; SL23– Personal time management; SL24– Goal-oriented learning; SL25– Strengthening intrinsic motivation
Organizational Resilience	Learning From Crises	OR1– Learning from failures; OR2– Crisis documentation; OR3– Rapid breakdown analysis; OR4– Reconstruction of crisis knowledge; OR5– Reduction of recurring errors; OR6– Crisis decision-making; OR7– Post-event learning
	Technological Adaptability	OR8– Rapid technological adaptation; OR9– Learning new digital tools; OR10– System mastery; OR11– Job-role adaptation; OR12– Reduction of resistance to technology; OR13– Process flexibility; OR14– Continuity of digital operations
	Interdepartmental Trust	OR15– Cross-department trust; OR16– Transparent communication; OR17– Interunit collaboration; OR18– Trust in digital data; OR19– Shared accountability; OR20– Team cohesion

Table 1 presents all 55 open codes derived from semi-structured interviews, grouped into nine subthemes and three main themes. The qualitative evidence indicates that digital mentoring is not limited to training delivery but functions as a dynamic ecosystem of collaborative learning and performance support. Smart learning emerges as a data-driven, adaptive process supported by intelligent analytics and rapid feedback. Organizational resilience reflects the ability of employees to learn from crises, adapt to emerging technologies, and maintain interdepartmental trust during uncertainty. These qualitative findings provided the conceptual foundation for the quantitative phase.

Table 2. Descriptive Statistics for Quantitative Variables

Variable	Mean	SD	Skewness	Kurtosis
Digital Mentoring	3.89	0.71	-0.42	-0.31
Smart Learning	4.02	0.68	-0.55	-0.29
Organizational Resilience	3.94	0.74	-0.33	-0.44
Digital Transformational Leadership	3.76	0.79	-0.28	-0.51

Table 2 displays the descriptive statistics for all study variables. Mean scores indicate generally positive perceptions of digital mentoring, smart learning, resilience, and digital transformational leadership. All skewness and kurtosis values fall within acceptable normality thresholds (±1), supporting suitability for PLS-SEM.

Table 3. Reliability and Validity Indicators

Construct	Cronbach's α	Composite Reliability (CR)	AVE	MaxR(H)	VIF
Digital Mentoring	0.91	0.93	0.62	0.94	2.14
Smart Learning	0.88	0.90	0.59	0.91	1.98
Organizational Resilience	0.89	0.91	0.60	0.92	2.21
Digital Transformational Leadership	0.87	0.89	0.57	0.90	1.85

Table 3 demonstrates strong internal consistency and excellent convergent validity across all constructs. Cronbach's α and composite reliability values exceed 0.87, while AVE values surpass the 0.50 threshold. VIF values below 3 confirm no multicollinearity. These indicators verify the adequacy of the measurement model.

Table 4. Model Fit Indices (PLS-SEM)

Fit Index	Value	Criterion	Interpretation
SRMR	0.046	< 0.08	Good fit
NFI	0.91	> 0.90	Good fit
RMS Theta	0.11	< 0.12	Acceptable
GoF	0.56	> 0.36	Strong global fit
R^2 – Smart Learning	0.45	Moderate–Strong	High explained variance
R^2 – Organizational Resilience	0.54	Strong	Substantial explained variance
Q^2 – Smart Learning	0.31	> 0	Predictive relevance
Q^2 – Organizational Resilience	0.36	> 0	Strong predictive relevance

Table 4 indicates that the model meets all benchmark standards for PLS structural modeling. SRMR and NFI confirm strong model fit, while R^2 and Q^2 values demonstrate substantial explanatory and predictive power. The GoF index of 0.56 supports overall structural robustness.

Table 5. Direct, Indirect, Moderation Effects and t-Values

Effect Type	Pathway	β	t-value	p-value	Interpretation
Direct Effects	Digital Mentoring → Smart Learning	0.67	12.84	< 0.001	Strong positive effect
	Smart Learning → Organizational Resilience	0.59	10.47	< 0.001	Strong positive effect
	Digital Mentoring → Organizational Resilience	0.18	2.31	< 0.05	Significant direct effect
Indirect Effects	Digital Mentoring → Smart Learning → Resilience	0.39	3.98	< 0.01	Significant mediation
Moderation	DTL × Digital Mentoring → Resilience	0.21	2.06	< 0.05	Positive moderating effect
Effect Sizes (f^2)	DM→SL = 0.52; SL→OR = 0.41; DM→OR = 0.09	—	—	Medium–large effects
Variance Explained	R^2 (SL = 0.45; OR = 0.54)	—	—	Strong explanatory power

Table 5 provides the complete structural effects, including t-values. Digital mentoring strongly predicts smart learning, and smart learning significantly enhances organizational resilience. The indirect path confirms meaningful mediation. Digital transformational leadership amplifies the mentoring–resilience link, demonstrating a significant moderating effect. Effect sizes and explained variance further support the model's predictive strength.
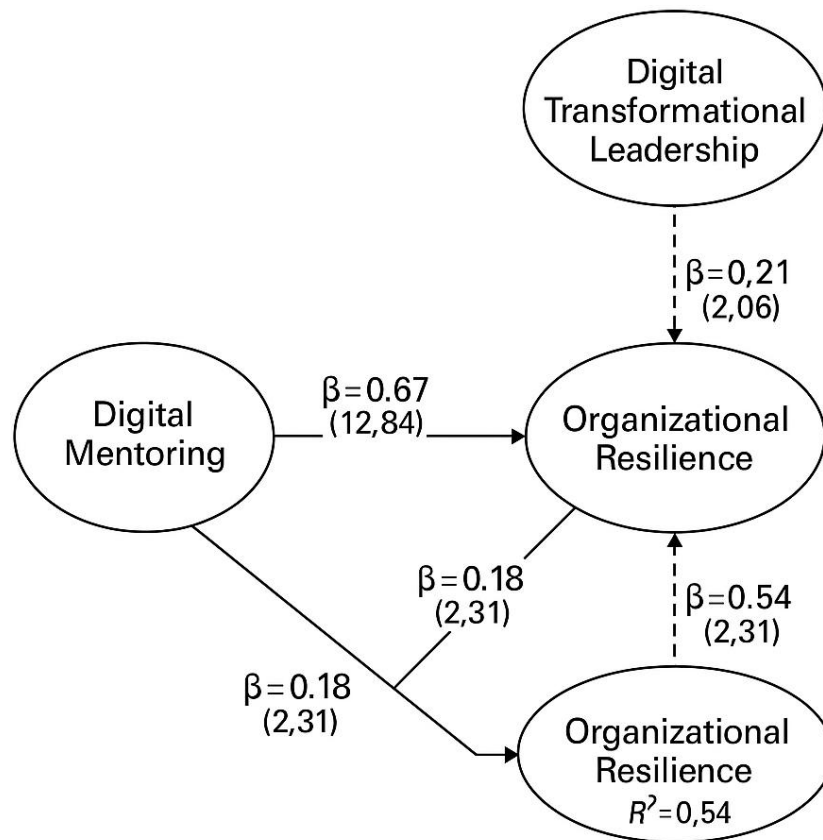
Figure 1. Final Model

4. Discussion and Conclusion

The findings of this study provide a comprehensive understanding of how digital mentoring strengthens organizational resilience in energy service companies by enhancing smart learning processes, facilitating adaptive behaviors, and supporting technology-driven professional development. The qualitative and quantitative results converge to show that digital mentoring significantly impacts key organizational capacities that are essential for navigating technological change, operational uncertainty, and complex environmental conditions. The strong path coefficients found in the structural model indicate that digital mentoring is not merely a supportive developmental activity but a strategic mechanism that promotes resilience through learning adaptability and interdepartmental collaboration.

The first major finding demonstrates that digital mentoring exerts a substantial and direct effect on smart organizational learning. This aligns with prior research emphasizing that digital mentoring enables employees to access knowledge-rich environments, benefit from guided learning experiences, and engage with mentors through interactive digital platforms [1]. The strong predictive

relationship identified in our model suggests that digital mentoring strengthens learning pathways by providing employees with data-driven feedback, personalized learning opportunities, and continuous professional support. Studies have consistently shown that digital mentoring amplifies the benefits of online learning by integrating reflective practice, synchronous and asynchronous guidance, and problem-solving through networked collaboration [2]. These findings reinforce the notion that mentoring is evolving from a face-to-face relational approach to a digitally mediated learning system that improves access, flexibility, and engagement.

The results also demonstrate that smart learning directly enhances organizational resilience, emphasizing the role of adaptive learning systems in preparing employees for technological disruptions and crises. This is consistent with research indicating that resilience is strengthened when organizations foster rapid learning cycles, promote flexibility, and encourage employees to engage with data and digital tools to solve emerging problems [9]. Smart learning, driven by analytics and rapid feedback mechanisms, equips employees with the skills to adjust quickly to operational changes, anticipate risks, and recover effectively. This supports broader findings that highlight the

mediating role of learning capability in improving resilience outcomes in both private and public sector organizations [11]. Thus, the empirical evidence supports the central role of smart learning as an engine of organizational resilience.

The significant indirect effect of digital mentoring on organizational resilience through smart learning further underscores the importance of digital learning ecosystems. Digital mentoring provides the structure, tools, and interpersonal support that employees need to engage in meaningful learning experiences, which in turn enhances resilience. This mediated pathway mirrors previous work showing that effective mentoring contributes to employee adaptability, psychological readiness, and performance stability during change [12]. It also reflects findings from studies showing that digitally supported mentoring improves participants' ability to cope with new roles, technological transitions, and complex work environments [5]. When employees receive structured guidance, continuous feedback, and emotional support through digital platforms, they are better equipped to manage uncertainty and maintain performance. Therefore, digital mentoring should be viewed as a foundational component of organizational resilience strategy rather than an isolated HR practice.

The moderating role of digital transformational leadership further highlights the strategic importance of leadership behaviors in digital environments. The results show that digital transformational leadership strengthens the positive impact of digital mentoring on organizational resilience, suggesting that leaders who champion digital innovation, encourage experimentation, and support employee learning amplify the benefits of mentoring initiatives. This finding is consistent with research emphasizing the importance of leadership composition and organizational environment in fostering resilience [14]. Leadership that promotes digital tools, encourages data-informed decision-making, and models adaptability significantly contributes to developing a resilient workforce. This dynamic is supported by studies showing that leaders play an essential role in shaping the organizational context in which mentoring and learning occur, thereby affecting long-term resilience and performance outcomes [8]. The positive moderation observed in this study confirms that leadership is a powerful catalyst for resilience-building in digitally transforming organizations.

The qualitative findings complement the quantitative model by illustrating how digital mentoring operates in everyday organizational contexts. Participants described digital mentoring as a mechanism that facilitates platform-based learning, networked collaboration, and real-time professional support. These findings align with studies emphasizing that digital mentoring environments allow users to engage in continuous peer interaction and knowledge co-creation, leading to deeper learning experiences [3]. The qualitative themes of adaptive learning, interdepartmental trust, and rapid technological adjustment are consistent with the broader literature on organizational resilience, which highlights learning from crises and technological adaptability as key resilience drivers [6]. These qualitative insights demonstrate that digital mentoring fosters a culture of collaboration, transparency, and continuous development—attributes that are essential for sustaining organizational resilience in dynamic environments.

This study also contributes to emerging discussions on the intersection between digital technologies and resilience. Digital mentoring facilitates not only skill development but also essential psychosocial support that enhances employee well-being, confidence, and motivation. Research on adjustment tendencies and psychological well-being reinforces the idea that resilience is strengthened when individuals feel supported during transitions and when their learning experiences align with their psychological needs [13]. The experiences shared by interview participants highlight how digital mentoring promotes emotional safety, reduces resistance to technological change, and fosters a sense of collective responsibility. These psychosocial mechanisms complement the learning and structural components of resilience, underscoring that digital mentoring supports both human and organizational adaptation.

Furthermore, the findings resonate with contemporary research on cyber resilience and the organizational response to digital threats. The ability of employees to adapt to new technologies, maintain trust in digital systems, and collaborate across departments is essential for cyber resilience, particularly in sectors where operational continuity relies on integrated digital systems [10]. The evidence from this study suggests that digital mentoring enhances cyber resilience by strengthening digital literacy, promoting proactive learning, and supporting employees during digital transitions. This is particularly relevant for energy service companies, where operational safety, real-time coordination, and technological reliability are critical.

Additionally, the cultural components of resilience highlighted in the qualitative findings reflect trends in organizational culture research. Workplace cultures that

prioritize learning, collaboration, and psychological safety tend to produce more resilient employees and better performance outcomes [11]. Digital mentoring, by enhancing communication and fostering trust between departments, contributes to a more cohesive and adaptable organizational culture. This supports findings that organizational virtuousness, resilience, agility, and collectivism are intertwined in shaping employee well-being and organizational performance [12]. When digital mentoring is implemented as an integrated strategy, it strengthens the relational and cultural foundations of resilience.

The integrated findings also parallel insights from global entrepreneurial and SME-focused resilience studies. Research shows that organizations operating in turbulent environments depend heavily on adaptive learning, mentor-supported development, and psychological resilience to survive and grow [7]. The interplay between digital mentoring and organizational resilience observed in this study mirrors patterns found in entrepreneurial ecosystems, where mentor support systems significantly enhance resilience and adaptability [6]. These parallels strengthen the relevance of digital mentoring beyond the energy sector and highlight its broader applicability across various organizational settings.

Overall, the findings present strong evidence that digital mentoring is a central component of organizational resilience in digitally intensive industries. By promoting smart learning, fostering adaptive behaviors, enhancing employee well-being, and strengthening leadership support, digital mentoring creates a multi-layered foundation for resilience. The empirical and qualitative outcomes reinforce the argument that digital mentoring should be considered a strategic investment, particularly in sectors undergoing rapid technological transformation.

Although this study offers valuable contributions, it has several limitations. First, the quantitative data were collected from a single energy service organization, which may limit the generalizability of the findings to other sectors or organizational contexts. Second, self-reported data may be susceptible to social desirability bias, particularly when evaluating leadership behaviors and resilience. Third, the study design was cross-sectional, preventing the examination of long-term changes in resilience or learning development. Fourth, the qualitative sample, despite including experienced managers and specialists, may not fully represent all perspectives within the organization.

Future studies should extend this research by exploring digital mentoring and resilience across diverse industries, enabling broader comparative insights. Longitudinal designs could assess how digital mentoring influences resilience over time, especially during major technological transitions. Future research may also incorporate multi-source data, such as objective performance indicators or digital interaction logs, to complement self-reported measures. Examining additional moderating variables such as organizational culture, digital maturity, or job complexity may further enrich understanding of the mechanisms linking digital mentoring to resilience.

Organizations should invest in structured digital mentoring systems that integrate learning analytics, personalized development pathways, and real-time feedback to enhance employee adaptability. Leaders should actively support digital learning initiatives, modeling openness toward innovation and guiding employees through technological transitions. To strengthen resilience, organizations should promote cross-department collaboration, encourage knowledge sharing, and embed digital mentoring practices within broader organizational development strategies.

Authors' Contributions

Authors equally contributed to this article.

Acknowledgments

Declaration of Interest

The authors report no conflict of interest.

Funding

Ethical Considerations

All procedures performed in this study were under the ethical standards.

References

[1] K. L. Guthrie and J. L. Meriwether, "Leadership development in digital spaces through mentoring, coaching, and advising," vol. 2018, 2018, pp. 99-110.

[2]   P. Semingson, "Trends in Digital Mentoring for Language Teachers: Promising Practices, Caveats, and Future Directions," *New Directions for Teaching and Learning,* 2023, doi: 10.1002/tl.20557.

[3]   S. Lall, L. Chen, and D. P. Mason, "Digital Platforms and Entrepreneurial Support: A Field Experiment in Online Mentoring," *Small Business Economics,* 2022, doi: 10.1007/s11187-022-00704-8.

[4]   E. Lentz and N. Bloom, "The Link Between the Career plateau and Mentoring Addressing the Empirical Gap Work-life Balance management practices and productivity," University of South Florida International bureau of economic research, 2022. [Online]. Available: https://digitalcommons.usf.edu/etd/1129/

[5]   R. L. Radlick, J. Mirkovic, S. Przedpelska, E. H. Brendmo, and D. Gammon, "Experiences and Needs of Multicultural Youth and Their Mentors, and Implications for Digital Mentoring Platforms: Qualitative Exploratory Study," *Jmir Formative Research,* 2020, doi: 10.2196/15500.

[6]   O. B. O. Damoah, "The effect of organizational resilience on the survival of SME exporters: The Role Of Entrepreneur Resilience And Environmental Turmoil," *Journal of International Entrepreneurship,* pp. 1-32, 2025, doi: 10.1007/s10843-025-00372-1.

[7]   A. A. Mahamat, D. Vagai, and L. P. Dana, "Does entrepreneurs' psychology and organizational resilience of SMEs: empirical findings from Central Africa," *International Entrepreneurship and Management Journal,* vol. 21, no. 1, pp. 1-15, 2025, doi: 10.1007/s11365-024-01022-z.

[8]   M. P. Florez-Jimenez, A. Lleo, P. Ruiz-Palomino, and A. F. Muñoz-Villamizar, "Corporate sustainability, organizational resilience, and corporate purpose: a review of the academic traditions connecting them," *Review of Managerial Science,* vol. 19, no. 1, pp. 67-104, 2025, doi: 10.1007/s11846-024-00735-3.

[9]   A. Nelson, W. Lie, and A. Setyawan, "Do Organizational Innovation and SHRM Practices Improve Organizational Resilience? The Mediating Role of Employee Resilience," *Jurnal Manajemen Bisnis,* vol. 16, no. 1, pp. 227-248, 2025, doi: 10.18196/mb.v16i1.24797.

[10] M. Neri, F. Niccolini, and F. Virili, "Organizational cyber resilience: toward an integrative conceptual framework," *Management Review Quarterly,* pp. 1-52, 2025, doi: 10.1007/s11301-025-00496-7.

[11] N. Pourpaki, B. Nabizadeh, and A. Jahanshahi, "Investigating the Mediating Role of Resilience in the Workplace in Relation to Organizational Culture and Employee Performance," *Police Organizational Development Quarterly,* vol. 22, no. 92, pp. 77-98, 2025. [Online]. Available: https://elmnet.ir/doc/2959874-52118.

[12] P. Panda and P. Singh, "Perceived organizational virtuousness and employee's subjective well-being: examining the role of resilience, agility and collectivism," *Management Decision,* 2025, doi: 10.1108/MD-01-2024-0076.

[13] U. J. Ofem, "Adjustment Tendencies Among Transiting Students: A Mediation Analysis Using Psychological Wellbeing Indices," (in en), *International Journal of Education and Cognitive Sciences,* vol. 4, no. 3, pp. 1-19, 2023, doi: 10.61838/kman.ijecs.4.3.1.

[14] Y. Zhou and H. Lan, "TMT gender diversity, organizational environment and corporate resilience," *Current Psychology,* pp. 1-15, 2025, doi: 10.1007/s12144-025-07711-4.