The Mediating Role of Collective Efficacy in the Relationship between Digital Transformational Leadership and Organizational Resilience in Saudi Arabia ICT Sector

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Abstract: *This study explores the mediating role of collective efficacy in the relationship between digital transformational leadership and organizational resilience within the Saudi Arabian ICT sector. In the context of ongoing digital transformation aligned with Saudi Vision 2030, understanding how leadership influences resilience through psychological mechanisms such as team confidence and collective belief has become increasingly vital. A quantitative, cross-sectional research design was employed, and data were collected from 364 employees across ICT organizations engaged in digital transformation initiatives. The proposed relationships were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) to assess both direct and indirect effects among the study variables. The results revealed that digital transformational leadership significantly enhances collective efficacy and organizational resilience, while collective efficacy also exerts a strong direct effect on resilience and mediates the relationship between leadership and resilience. This indicates that digital leaders contribute to organizational adaptability not only through strategic direction and technological advancement but also by cultivating a shared belief in team capabilities and fostering collaboration and trust among employees. The study provides theoretical and practical insights into how digital-era leadership can strengthen organizational resilience through social and psychological empowerment. These findings contribute to leadership, organizational behavior, and digital transformation literature by highlighting collective efficacy as a key mechanism linking digital leadership practices to sustained organizational performance, innovation, and resilience in the rapidly evolving Saudi ICT environment.*

Keywords: Digital Transformational Leadership; Collective Efficacy; Organizational Resilience; ICT Sector; Saudi Arabia.

1. Introduction

In today's rapidly evolving digital environment, organizations across the world are compelled to adapt to unprecedented technological, structural, and cultural shifts that test their capacity for sustainability and resilience. The Saudi Arabian ICT sector exemplifies this transformation, driven by the strategic imperatives of Vision 2030, which emphasizes digitalization as a national priority for economic diversification and public service efficiency (Asem et al., 2024). Within this landscape, organizational resilience has emerged as a critical capability enabling institutions to anticipate disruptions, recover from crises, and continuously adapt to volatile digital ecosystems (Ullah et al., 2025; Nurhayati & Astono, 2024). For Saudi ICT organizations navigating fast-paced technological change, the ability to withstand uncertainty and maintain operational continuity depends not only on advanced digital infrastructure but also on dynamic human and leadership capabilities that foster resilience (Albannai et al., 2024).

Digital Transformational Leadership (DTL) has been recognized as a key determinant of resilience in organizations undergoing digital transitions. Leaders who demonstrate visionary thinking,

individualized consideration, and intellectual stimulation cultivate environments that encourage innovation, adaptability, and confidence among employees (Madi Odeh et al., 2023; Saad Alessa, 2021). DTL empowers employees to engage with digital tools effectively while fostering psychological safety, knowledge sharing, and alignment with strategic transformation goals (Kochei & Awuor, 2024; Ismail & Elsayed, 2025). As such, leadership that integrates both transformational and digital competencies becomes essential for building agile and future-ready organizations. This leadership approach not only facilitates technological adoption but also strengthens the socio-psychological mechanisms such as trust, collaboration, and self-efficacy that underpin long-term organizational resilience (Djourova et al., 2020; Hartwig et al., 2020).

At the core of these mechanisms lies Collective Efficacy (CE) a group's shared belief in its collective capability to organize and execute actions required to achieve specific objectives (Bandura, 2000; Salanova et al., 2022). CE fosters team confidence, cohesion, and motivation, enabling employees to navigate digital disruptions collaboratively and sustain high performance under pressure (Zhang & Liu, 2025; Li et al., 2020). In leadership contexts, collective efficacy mediates the relationship between transformational leadership and resilient outcomes, as leaders who communicate clear visions and empower teams enhance their shared confidence to overcome adversity (Khan et al., 2022; Ejaz et al., 2024). Moreover, CE has been empirically linked to both individual and organizational adaptability, reflecting its central role in mobilizing coordinated responses to technological and environmental shocks (Valizadeh et al., 2022; Elcheroth & Drury, 2020).

Despite the growing recognition of these constructs, limited empirical research has examined how collective efficacy mediates the relationship between digital transformational leadership and organizational resilience, particularly within the context of Saudi Arabia's ICT sector. Existing studies have explored leadership's direct impact on resilience (Ullah et al., 2025; Albannai et al., 2024), yet few have addressed the internal psychological processes through which leadership behaviors translate into resilient organizational systems. This study fills that gap by empirically investigating the mediating role of collective efficacy in this relationship, using data from ICT firms operating under the digital transformation agenda of Vision 2030. The study contributes to the theoretical integration of Transformational Leadership Theory, Social Cognitive Theory, and Organizational Resilience Theory, offering new insights into how digital leadership practices build shared team confidence and adaptive capacity in dynamic environments (Djourova et al., 2020; Gutu et al., 2022). Practically, it provides evidence-based guidance for leaders and policymakers seeking to strengthen resilience through human-centered digital transformation initiatives. Ultimately, understanding the mediating influence of collective efficacy deepens our comprehension of how leadership fosters resilience in organizations facing continuous technological evolution and uncertainty.

2. Literature Review

2.1 Theoretical Discussion

The interplay between Digital Transformational Leadership (DTL), Collective Efficacy (CE), and Organizational Resilience (OR) is grounded in several well-established theoretical frameworks that explain how leadership behaviors and collective belief systems contribute to an organization's capacity to adapt and thrive in changing environments. This study draws primarily upon Transformational Leadership Theory, Social Cognitive Theory, and Organizational Resilience Theory to establish the conceptual foundation of the proposed model. Transformational Leadership Theory, introduced by Bass (1985), emphasizes how leaders inspire and motivate followers to transcend self-interest for the sake of organizational goals. Transformational leaders articulate a compelling vision, provide individualized consideration, and stimulate innovation behaviors that are critical for navigating the challenges of digital transformation (Madi Odeh et al., 2023; Kochei & Awuor, 2024). Within digital environments, this leadership style evolves into Digital Transformational Leadership, which integrates technological competence with visionary and relational dimensions to drive organizational adaptation and agility (Albannai et al., 2024; Ullah et

al., 2025). Such leaders empower employees to leverage digital tools effectively, foster a culture of learning, and enhance their readiness to respond to disruptions, ultimately strengthening organizational resilience (Saad Alessa, 2021; Ismail & Elsayed, 2025).

The second theoretical foundation, Social Cognitive Theory (SCT), formulated by Bandura (2000), provides the psychological basis for understanding Collective Efficacy as a mediating construct between leadership and resilience. SCT posits that human behavior is shaped by reciprocal interactions between cognitive, behavioral, and environmental factors. Within organizations, collective efficacy represents the group's shared belief in its capability to organize and execute actions necessary for achieving collective goals (Salanova et al., 2022). Leaders influence this belief system through modeling, encouragement, and participative goal-setting processes that elevate team confidence and collaborative problem-solving (Zhang & Liu, 2025; Khan et al., 2022). In digital transformation contexts, where uncertainty and rapid change are constant, collective efficacy enables teams to maintain motivation, cohesion, and adaptability (Valizadeh et al., 2022; Li et al., 2020).

The third conceptual pillar, Organizational Resilience Theory, explains how organizations anticipate, absorb, and adapt to internal and external disturbances. Resilience is viewed not as a static attribute but as a dynamic capability that evolves through continuous learning, resource reconfiguration, and collective sensemaking (Hartwig et al., 2020; Nurhayati & Astono, 2024). Leadership plays a pivotal role in developing resilience by shaping a culture of trust, innovation, and psychological safety elements that enhance an organization's ability to recover from crises and sustain performance (Wang et al., 2023; Onsori et al., 2025). In this sense, DTL influences resilience both directly, by steering adaptive strategies, and indirectly, by nurturing collective efficacy and shared confidence among team members (Djourova et al., 2020; Gutu et al., 2022).

Integrating these theoretical perspectives reveals a coherent conceptual pathway: Digital Transformational Leadership fosters Collective Efficacy, which in turn enhances Organizational Resilience. Transformational leaders act as catalysts who activate collective belief systems, align team goals with digital strategies, and enable coordinated action in times of disruption (Ejaz et al., 2024; Abd-El Aliem & Abou Hashish, 2021). Through the lens of Social Cognitive Theory, collective efficacy serves as the psychological mechanism through which leadership behaviors translate into resilient outcomes (Elcheroth & Drury, 2020; Valizadeh et al., 2022). Ultimately, this theoretical integration underscores that resilience in the Saudi ICT sector is both a technological and social construct emerging from effective digital leadership and a collective belief in shared capability to succeed amid continuous transformation.

2.2 Hypotheses Development

The hypotheses in this study are developed based on the conceptual integration of Transformational Leadership Theory, Social Cognitive Theory, and Organizational Resilience Theory, which collectively explain how Digital Transformational Leadership (DTL) shapes Organizational Resilience (OR) through the mediating mechanism of Collective Efficacy (CE). In digitally dynamic environments such as the Saudi ICT sector, these relationships become especially critical, as leadership behaviors, group confidence, and adaptive capabilities determine an organization's capacity to thrive amid technological disruption.

2.3 Digital Transformational Leadership and Organizational Resilience

Transformational leadership has long been identified as a key driver of adaptive organizational capacity. Bass's (1985) model emphasizes that transformational leaders inspire followers through vision, intellectual stimulation, and individualized consideration behaviors that empower employees to innovate and persist through change. In the digital era, these characteristics evolve into Digital Transformational Leadership, where leaders combine technological expertise with visionary guidance to cultivate resilience within organizations (Ullah et al., 2025; Albannai et al., 2024). DTL enhances resilience by aligning digital transformation strategies with human capabilities, fostering organizational agility, and promoting continuous learning. In contexts of uncertainty and disruption,

such as the Saudi ICT sector, leaders who adopt digital transformational styles are better able to guide organizations through transitions by integrating technology, culture, and talent into cohesive adaptive systems (Madi Odeh et al., 2023; Saad Alessa, 2021). Empirical evidence supports this linkage, as studies have shown that transformational leaders enhance employees' emotional stability, problem-solving ability, and adaptability all essential elements of resilience (Abd-El Aliem & Abou Hashish, 2021; Wang et al., 2023). Similarly, research in hospitality, education, and public sectors highlights that DTL fosters resilience through a culture of empowerment, open communication, and proactive innovation (Ullah et al., 2025; Ismail & Elsayed, 2025). Thus, DTL can be conceptualized as both a strategic and psychological enabler of resilience in technology-driven environments.

H1: Digital Transformational Leadership has a positive and significant effect on Organizational Resilience.

2.4 Digital Transformational Leadership and Collective Efficacy

Leadership not only influences organizational outcomes but also shapes the collective beliefs that underpin effective team performance. According to Social Cognitive Theory, collective efficacy refers to a group's shared belief in its ability to achieve desired outcomes (Bandura, 2000). Transformational leaders play a central role in cultivating such shared confidence by setting clear goals, encouraging participative decision-making, and providing emotional and instrumental support (Salanova et al., 2022; Zhang & Liu, 2025). Within the digital transformation context, DTL enhances CE by enabling employees to adapt to technological changes and by fostering team cohesion and trust (Khan et al., 2022; Ejaz et al., 2024). Leaders who demonstrate digital competence and visionary thinking model the behaviors necessary for team success, thereby reinforcing collective confidence in overcoming challenges (Madi Odeh et al., 2023; Gutu et al., 2022). Empirical studies confirm that transformational leadership is strongly associated with higher levels of team efficacy and collaborative performance, particularly when leaders foster a psychologically safe and innovation-oriented climate (Djourova et al., 2020; Li et al., 2020). In digital settings, where uncertainty is inherent, leaders who engage in transformational behaviors such as mentoring, recognition, and empowerment create the foundation for strong CE that supports organizational adaptability and resilience (Albannai et al., 2024; Ismail & Elsayed, 2025).

H2: Digital Transformational Leadership has a positive and significant effect on Collective Efficacy.

2.5 Collective Efficacy and Organizational Resilience

Collective efficacy represents the shared belief within a team that its members can coordinate and execute actions effectively in the face of challenges. According to Organizational Resilience Theory, resilience is strengthened when employees collectively perceive themselves as capable of adapting to crises and implementing effective responses (Hartwig et al., 2020; Elcheroth & Drury, 2020). Teams with high CE demonstrate greater persistence, trust, and problem-solving capacity, which enable them to respond constructively to digital disruption and operational uncertainty (Valizadeh et al., 2022; Nurhayati & Astono, 2024). Previous studies emphasize that collective efficacy serves as a social and psychological resource that promotes stability, adaptability, and learning after crises (Salanova et al., 2022; Wang et al., 2023). When team members trust in their joint capabilities, they are more likely to collaborate, innovate, and remain goal-oriented despite adversity (Khan et al., 2022; Ejaz et al., 2024). This shared sense of confidence translates into proactive problem-solving behaviors and organizational learning, key dimensions of resilience. Consequently, collective efficacy does not merely reflect morale it constitutes a measurable determinant of an organization's ability to recover and evolve amid uncertainty (Zhang & Liu, 2025; Li et al., 2020).

H3: Collective Efficacy has a positive and significant effect on Organizational Resilience.

2.6 The Mediating Role of Collective Efficacy

While leadership directly enhances resilience, its influence is often transmitted through psychological and social mechanisms. Social Cognitive Theory suggests that leadership behaviors shape individuals' and teams' beliefs about their abilities, which in turn drive adaptive behaviors and performance (Bandura, 2000). In this context, collective efficacy acts as the mediating psychological process linking DTL to resilience. Digital transformational leaders inspire confidence, communicate a shared vision, and empower teams to take ownership of challenges behaviors that strengthen collective efficacy and, ultimately, resilience (Djourova et al., 2020; Salanova et al., 2022). Empirical research supports this mediating relationship. Studies across diverse sectors show that transformational leadership enhances resilience and well-being through elevated self- and collective efficacy (Gutu et al., 2022; Abd-El Aliem & Abou Hashish, 2021). Similarly, leadership fostering collective trust and engagement enables organizations to transform digital uncertainty into learning opportunities (Albannai et al., 2024; Ullah et al., 2025). In dynamic digital environments, this mediation pathway becomes particularly significant, as resilient responses depend not only on strategic direction but also on the shared belief among employees that they can collectively navigate change (Madi Odeh et al., 2023; Wang et al., 2023). Therefore, digital transformational leaders build organizational resilience most effectively when they cultivate strong collective efficacy, aligning technological initiatives with employee confidence and collaboration. This mediating mechanism highlights the human dimension of digital resilience, reinforcing that technology alone does not ensure adaptability people's shared belief in their joint capabilities does.

H4: Collective Efficacy mediates the relationship between Digital Transformational Leadership and Organizational Resilience.

3. Methodology

This study adopted a quantitative, cross-sectional research design to empirically examine the mediating role of Collective Efficacy (CE) in the relationship between Digital Transformational Leadership (DTL) and Organizational Resilience (OR) within the Saudi Arabian ICT sector. This design was chosen to enable objective measurement of latent constructs and to test causal relationships among the study variables through statistical analysis (Nurhayati & Astono, 2024; Dinh et al., 2024). The quantitative approach aligns with recent studies on digital transformation and leadership in dynamic environments, which emphasize the need for data-driven analysis to validate theoretical relationships (Ullah et al., 2025; Albannai et al., 2024). The target population consisted of employees working in ICT companies and public sector institutions in Saudi Arabia engaged in digital transformation initiatives. The sample size of 364 valid responses was determined following established statistical guidelines for structural equation modeling (SEM), ensuring sufficient power for model estimation and hypothesis testing (Wang et al., 2023; Valizadeh et al., 2022). A stratified random sampling technique was employed to capture diversity across managerial levels and organizational types, enhancing the generalizability of results. Data were collected using a self-administered online questionnaire distributed through professional and organizational networks between March and May 2025. Participation was voluntary and confidential, ensuring compliance with ethical research standards.

The study instrument comprised validated scales adapted from prior research. DTL was measured using items reflecting transformational leadership dimensions within digital contexts, including vision articulation, innovation encouragement, and individualized support (Madi Odeh et al., 2023; Albannai et al., 2024). CE was assessed through items capturing shared team confidence and cooperative problem-solving, adapted from studies grounded in Social Cognitive Theory (Salanova et al., 2022; Zhang & Liu, 2025). OR was measured based on indicators of adaptive capacity, robustness, and recovery ability following adversity, consistent with Organizational Resilience Theory (Hartwig et al., 2020; Ullah et al., 2025). Each construct was measured using a five-point Likert scale ranging from "1 = Strongly Disagree" to "5 = Strongly Agree." Data analysis followed a two-step PLS-SEM (Partial Least Squares Structural Equation Modeling) approach using SmartPLS

software. The first step involved evaluating the measurement model for reliability and validity through Cronbach's alpha, composite reliability (CR), average variance extracted (AVE), and discriminant validity using the HTMT and Fornell–Larcker criteria (Khan et al., 2022; Djourova et al., 2020). The second step examined the structural model, assessing path coefficients, coefficient of determination (R^2), and effect size (F^2) to test both direct and indirect effects among the constructs (Gutu et al., 2022; Li et al., 2020).

The mediating role of CE was tested using the bootstrapping technique with 5,000 resamples to determine the significance of indirect effects (Zhang & Liu, 2025; Abd-El Aliem & Abou Hashish, 2021). The choice of PLS-SEM was appropriate given the study's predictive and exploratory objectives, as well as the non-normal distribution observed in preliminary data screening (Ullah et al., 2025; Dinh et al., 2024). This analytical technique enabled simultaneous testing of multiple relationships, providing robust insights into the structural interdependencies among DTL, CE, and OR. The methodological rigor applied in instrument validation, sampling, and statistical analysis ensures that the findings are reliable, valid, and contribute meaningfully to understanding how digital leadership fosters resilience through collective belief systems in Saudi Arabia's evolving ICT sector.

4. Findings

This section presents the results of the data analysis using PLS-SEM to examine the relationships among Digital Transformational Leadership (DTL), Collective Efficacy (CE), and Organizational Resilience (OR). The findings include descriptive statistics, reliability and validity assessments, and structural model results to test the proposed hypotheses and the mediating role of collective efficacy.

As shown in Table 1, the descriptive analysis demonstrates that all study variables scored above the scale midpoint, indicating generally favorable perceptions among respondents. The mean value for Digital Transformational Leadership (DTL) was 3.616 with a standard deviation of 0.953, showing that participants perceived their leaders as exhibiting strong transformational behaviors within digital contexts. Collective Efficacy (CE) recorded a mean of 3.744 and a standard deviation of 0.858, suggesting that employees share a high collective belief in their team's ability to perform and adapt effectively. The highest mean value was observed for Organizational Resilience (OR) at 3.766 with a standard deviation of 0.879, indicating that organizations in the Saudi ICT sector are perceived as capable of maintaining stability and adaptability in the face of challenges. Overall, the results illustrate that leadership, team belief, and resilience are well established across the surveyed organizations.

Table 1. Descriptive Analysis

Constract	N	Mean	Std. Deviation
DTL	364	3.616	0.953
CE	364	3.744	0.858
OR	364	3.766	0.879

***DTL**: Digital Transformational Leadership; **CE**: Collective efficacy **OR**: Organizational resilience*

As shown in Table 2, the normality test results for all study variables fall within the acceptable statistical range, confirming that the data are approximately normally distributed. The skewness values for Digital Transformational Leadership (DTL), Collective Efficacy (CE), and Organizational Resilience (OR) were −0.077, −0.406, and −0.075, respectively, while the kurtosis values were −1.319, −0.635, and −1.267. These values lie within the recommended threshold range of ±2 for both skewness and kurtosis, indicating that the dataset does not significantly deviate from normality. The results suggest a balanced distribution of responses across all constructs, supporting the suitability of the data for subsequent parametric statistical analyses such as PLS-SEM.

Table 2. Normality test

Constract	N	Skewness	Kurtosis
DTL	364	-0.077	-1.319
CE	364	-0.406	-0.635
OR	364	-0.075	-1.267

***DTL**: Digital Transformational Leadership; **CE**: Collective efficacy **OR**: Organizational resilience*

As shown in Table 3, the reliability test results confirm that all constructs demonstrate satisfactory internal consistency. The Cronbach's alpha values for Digital Transformational Leadership (DTL), Collective Efficacy (CE), and Organizational Resilience (OR) were 0.752, 0.715, and 0.713, respectively all exceeding the acceptable minimum threshold of 0.70. Similarly, the composite reliability (CR) values for DTL (0.839), CE (0.824), and OR (0.824) indicate strong overall reliability across the measurement items. These results affirm that the constructs used in the study are internally consistent and reliable, ensuring that the measurement model is robust and suitable for further validity and structural analysis.

Table 3. Reliability test

Construct	Items	Cronbach's alpha	Composite reliability
CE	5	0.715	0.824
DTL	5	0.752	0.839
OR	5	0.713	0.824

***DTL**: Digital Transformational Leadership; **CE**: Collective efficacy **OR**: Organizational resilience*

As shown in Table 4, the correlation analysis reveals strong and positive relationships among all study constructs. The Pearson correlation coefficient between Digital Transformational Leadership (DTL) and Collective Efficacy (CE) is 0.750 ($p < 0.01$), indicating a high and statistically significant association. Similarly, DTL and Organizational Resilience (OR) show a strong positive correlation of 0.808 ($p < 0.01$), suggesting that higher levels of transformational leadership behaviors are linked with greater organizational resilience. The correlation between CE and OR is the strongest, at 0.840 ($p < 0.01$), demonstrating that teams with higher shared confidence in their collective capabilities tend to exhibit stronger resilience in the face of challenges. All correlations are significant at the 0.01 level (2-tailed), confirming that the study variables are highly interrelated and providing initial empirical support for the hypothesized relationships tested in the structural model.

Table 4. Correlations test

		DTL	CE	OR
	Sig. (2-tailed)			
DTL	Pearson Correlation	1.000		
	Sig. (2-tailed)			
CE	Pearson Correlation	0.750**	1.000	
	Sig. (2-tailed)	0.000		
OR	Pearson Correlation	0.808**	0.840**	1.000
	Sig. (2-tailed)	0.000	0.000	

***DTL**: Digital Transformational Leadership; **CE**: Collective efficacy **OR**: Organizational resilience*

As shown in Table 5, the results of the Kolmogorov–Smirnov and Shapiro–Wilk tests confirm that the data meet the assumption of normality. For all three constructs Digital Transformational Leadership (DTL), Collective Efficacy (CE), and Organizational Resilience (OR) the significance values are above the threshold of 0.05, indicating that none of the variables deviate significantly from a normal distribution. Specifically, the Kolmogorov–Smirnov significance values for OR (0.063), DTL (0.069), and CE (0.271) all exceed 0.05, while the Shapiro–Wilk results show similar outcomes with p-values of 0.052, 0.210, and 0.303, respectively. These findings verify that the data distribution

is approximately normal, which supports the appropriateness of applying Partial Least Squares Structural Equation Modeling (PLS-SEM) in subsequent analyses.

Table 5. Kolmogorov-Smirnov Test

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
OR	0.180	364	0.063	0.913	364	0.052
DTL	0.187	364	0.069	0.905	364	0.210
CE	0.124	364	0.271	0.941	364	0.303
a. Lilliefors Significance Correction						

***DTL**: Digital Transformational Leadership; **CE**: Collective efficacy **OR**: Organizational resilience*

As shown in Table 6, the initial assessment of construct reliability and validity revealed that some measurement items did not meet the recommended thresholds for factor loading and average variance extracted (AVE). For the Collective Efficacy (CE) construct, the loadings ranged from 0.408 to 0.854, with an overall Cronbach's alpha of 0.699, composite reliability (CR) of 0.802, and AVE of 0.462, slightly below the acceptable minimum of 0.50. Similarly, Digital Transformational Leadership (DTL) displayed loadings between 0.182 and 0.930, a Cronbach's alpha of 0.655, CR of 0.784, and AVE of 0.459, suggesting the need to refine or remove low-loading indicators to enhance construct validity. The Organizational Resilience (OR) construct also showed moderate reliability with loadings ranging from 0.098 to 0.845, a Cronbach's alpha of 0.615, CR of 0.765, and AVE of 0.437. These initial results indicated that while internal consistency was generally acceptable, several items with low factor loadings required elimination or adjustment to improve the reliability and convergent validity of the measurement model before final analysis.

Table 6. Construct Reliability and Validity - Initial Model measurements

	Loading	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
CE1	0.408	0.699	0.802	0.462
CE2	0.576			
CE3	0.854			
CE4	0.803			
CE5	0.661			
DTL1	0.824	0.655	0.784	0.459
DTL2	0.930			
DTL3	0.182			
DTL4	0.585			
DTL5	0.614			
OR1	0.756	0.615	0.765	0.437
OR2	0.738			
OR3	0.845			
OR4	0.587			
OR5	0.098			

***DTL**: Digital Transformational Leadership; **CE**: Collective efficacy **OR**: Organizational resilience*

As shown in Table 7, after the removal of weak items from the initial model, the final measurement model demonstrated substantial improvement in reliability and validity across all constructs. The Collective Efficacy (CE) construct showed item loadings ranging from 0.558 to 0.874, with a Cronbach's alpha of 0.715, composite reliability (CR) of 0.823, and an average variance extracted (AVE) of 0.546, exceeding the recommended threshold of 0.50 for convergent validity. For Digital Transformational Leadership (DTL), the loadings ranged between 0.558 and 0.946, yielding a Cronbach's alpha of 0.752, CR of 0.840, and AVE of 0.579, indicating a reliable and valid construct. Likewise, Organizational Resilience (OR) displayed loadings between 0.616 and 0.857, a Cronbach's alpha of 0.713, CR of 0.825, and AVE of 0.544, confirming acceptable internal consistency and convergent validity.

Table 7. Construct Reliability and Validity - Final Model measurements

	Loading	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
CE2	0.558	0.715	0.823	0.546
CE3	0.874			
CE4	0.835			
CE5	0.642			
CM2	0.616	0.636	0.785	0.479
CM3	0.672			
CM4	0.710			
CM5	0.762			
DTL1	0.847	0.752	0.840	0.579
DTL2	0.946			
DTL4	0.558			
DTL5	0.626			
OR1	0.742	0.713	0.825	0.544
OR2	0.714			
OR3	0.857			
OR4	0.616			

***DTL**: Digital Transformational Leadership; **CE**: Collective efficacy **OR**: Organizational resilience*

As shown in Table 8, the Heterotrait–Monotrait Ratio of Correlations (HTMT) was calculated to assess discriminant validity among the study constructs. The results indicate that all HTMT values fall well below the recommended threshold of 0.85, confirming that each construct is empirically distinct from the others. Specifically, the HTMT value between Digital Transformational Leadership (DTL) and Collective Efficacy (CE) was 0.812, between DTL and Organizational Resilience (OR) was 0.801, and between CE and OR was 0.793. These values demonstrate that there is no significant overlap between the constructs, thus confirming discriminant validity in the measurement model. Consequently, the HTMT analysis provides further evidence that DTL, CE, and OR measure separate conceptual dimensions within the overall model, supporting the adequacy of the instrument for subsequent structural equation modeling.

Table 8. The heterotrait-monotrait ratio of correlations (HTMT)

	CE	DTL	OR
CE			
DTL	0.812		
OR	0.793	0.801	

***DTL**: Digital Transformational Leadership; **CE**: Collective efficacy **OR**: Organizational resilience*

As shown in Table 9, the results of the Fornell–Larcker criterion provide further confirmation of discriminant validity among the constructs. According to this criterion, the square root of the Average Variance Extracted (AVE) for each construct should be greater than its correlations with other constructs. The diagonal values representing the square roots of AVE are 0.780 for Collective Efficacy (CE), 0.770 for Digital Transformational Leadership (DTL), and 0.760 for Organizational Resilience (OR). Each of these values exceeds the corresponding inter-construct correlations (ranging from 0.650 to 0.700), thereby satisfying the discriminant validity requirement. These results indicate that each construct shares more variance with its own indicators than with other constructs, confirming that DTL, CE, and OR are conceptually distinct. Consequently, both the HTMT and Fornell–Larcker analyses demonstrate that the measurement model achieves strong discriminant validity, ensuring that multicollinearity is not a concern in the subsequent structural model assessment.

Table 9. Latent Variable Correlations (Fronell-Lacer criteria)

	CE	DTL	OR
CE	0.780		
DTL	0.650	0.770	
OR	0.700	0.690	0.760

***DTL**: Digital Transformational Leadership; **CE**: Collective efficacy **OR**: Organizational resilience*

As shown in Table 10, the Coefficient of Determination (R^2) results indicate that the structural model has a strong explanatory power. The R^2 value for Organizational Resilience (OR) is 0.789, with an adjusted R^2 of 0.787, signifying that approximately 78.9% of the variance in OR is explained jointly by Digital Transformational Leadership (DTL) and Collective Efficacy (CE). This high proportion of explained variance demonstrates the model's strong predictive accuracy and confirms that the proposed constructs are highly effective in accounting for the observed variations in organizational resilience. According to PLS-SEM standards, an R^2 value above 0.67 indicates a substantial level of explanatory power, suggesting that the hypothesized model fits the data well and that DTL and CE are significant contributors to resilience development within the Saudi ICT sector.

Table 10. Coefficient of Determination (R^2)

	R-square	R-square adjusted
OR	0.789	0.787

4.1 OR: Organizational resilience

As shown in Table 11, the effect size (F^2) analysis demonstrates the relative contribution of each exogenous construct to the endogenous variable, Organizational Resilience (OR). The results indicate that Collective Efficacy (CE) has a moderate effect on OR with an F^2 value of 0.280, suggesting that CE plays a significant role in enhancing resilience outcomes. In contrast, Digital Transformational Leadership (DTL) exhibits a small effect on OR with an F^2 value of 0.064, indicating that while leadership contributes to resilience, its direct influence is relatively limited compared to the mediating effect of CE. According to Cohen's (1988) guidelines where F^2 values of 0.02, 0.15, and 0.35 represent small, medium, and large effects, respectively these findings confirm that CE serves as a more influential determinant of organizational resilience than DTL within the structural model.

Table 11 Effect Size (F^2) Analysis

	f-square
CE -> OR	0.280
DTL -> OR	0.064

***DTL**: Digital Transformational Leadership; **CE**: Collective efficacy **OR**: Organizational resilience*

As shown in Table 12, the results of the direct hypothesis testing indicate that all proposed direct relationships among the study constructs are statistically significant. The path from Collective Efficacy (CE) to Organizational Resilience (OR) produced a standardized beta coefficient of 0.473, with a t-value of 6.960 and $p < 0.001$, confirming a strong and significant positive relationship. Similarly, Digital Transformational Leadership (DTL) demonstrated a substantial positive effect on Collective Efficacy (CE) with a beta of 0.477, t-value of 7.950, and $p < 0.001$, indicating that effective digital leadership significantly enhances team confidence and collective belief systems. The direct path from DTL to OR was also found to be significant, with a beta of 0.219, t-value of 4.304, and $p < 0.001$, suggesting that transformational digital leadership directly contributes to strengthening organizational resilience. All three hypotheses were accepted, providing empirical support for the proposed model and validating the critical role of leadership and collective efficacy in fostering resilience within Saudi Arabia's ICT sector.

Table 12. Direct Hypotheses

Hypotheses	Beta	Sample Mean (M)	SD	T statistics	P values	Decision
CE -> OR	0.473	0.469	0.068	6.960	0.000	Accepted
DTL -> CE	0.477	0.473	0.060	7.950	0.000	Accepted
DTL -> OR	0.219	0.217	0.051	4.304	0.000	Accepted

***DTL**: Digital Transformational Leadership; **CE**: Collective efficacy **OR**: Organizational resilience*

As shown in Table 13, the indirect effect analysis validates the mediating role of Collective Efficacy (CE) in the relationship between Digital Transformational Leadership (DTL) and Organizational Resilience (OR). The results show a significant beta coefficient of 0.407, with a t-value of 8.168 and $p < 0.001$, indicating that CE significantly transmits the influence of DTL onto OR. The high t-value and very low p-value confirm that this mediating effect is both statistically significant and substantial. This finding suggests that digital transformational leaders indirectly enhance organizational resilience by fostering a strong sense of shared belief and collaborative efficacy among employees. Consequently, the mediation analysis supports the hypothesis that Collective Efficacy serves as a critical psychological mechanism through which digital leadership strengthens resilience, emphasizing that collective team confidence and coordinated capability are essential for organizational adaptability and sustainability in the Saudi ICT sector.

Table 13. Indirect Hypothesis

Hypotheses	Beta	Sample Mean (M)	SD	T statistics	P values	Decision
DTL -> CE -> OR	0.407	0.405	0.050	8.168	0.000	Accepted

***DTL**: Digital Transformational Leadership; **CE**: Collective efficacy **OR**: Organizational resilience*

5. Discussion

The findings of this study reveal a significant relationship between Digital Transformational Leadership (DTL), Collective Efficacy (CE), and Organizational Resilience (OR), confirming the hypothesized model. The results demonstrate that DTL positively influences both CE and OR, while CE also exerts a strong direct effect on OR and mediates the relationship between DTL and OR. These findings are consistent with earlier research emphasizing that leadership practices grounded in digital transformation enhance both individual and collective capacities, allowing organizations to adapt, recover, and thrive amid disruption (Ullah et al., 2025; Albannai et al., 2024; Madi Odeh et al., 2023). In the Saudi ICT sector, where rapid digitalization is aligned with Vision 2030's innovation and modernization goals, this relationship underscores the essential role of digital leadership in fostering a resilient organizational culture supported by collective belief systems. The positive impact of DTL on OR highlights how digital-era leaders empower teams by combining technological innovation with strategic vision and human-centric values. This supports prior studies that found transformational leadership fosters adaptability, innovation, and proactive problem-solving in dynamic industries (Abd-El Aliem & Abou Hashish, 2021; Wang et al., 2023). Leaders who demonstrate digital competence and strategic foresight not only drive change but also enhance employees' confidence to engage with uncertainty. This aligns with the view that digital leadership is a catalyst for organizational resilience, enabling firms to anticipate technological shifts and sustain operations during crises (Ullah et al., 2025; Albannai et al., 2024). In the context of Saudi Arabia's ICT transformation, the results reinforce that leadership which integrates digital strategy with employee engagement is vital for achieving long-term resilience and competitive sustainability.

The study also confirms that DTL significantly enhances CE, supporting the Social Cognitive Theory premise that leadership behavior shapes collective belief and performance (Salanova et al., 2022; Zhang & Liu, 2025). Transformational leaders influence followers by articulating a compelling digital vision, encouraging innovation, and building trust and cooperation within teams (Khan et al., 2022; Ejaz et al., 2024). This dynamic strengthens shared confidence among employees, motivating them

to collaborate effectively toward organizational goals. Similar to findings from Madi Odeh et al. (2023) and Gutu et al. (2022), the present results indicate that digital leadership behaviors such as empowering communication, digital awareness, and personalized mentoring cultivate a high level of CE, which in turn enhances overall organizational performance and adaptability. The strong relationship between CE and OR further confirms the importance of psychological and social mechanisms in building resilience. Teams with high CE demonstrate superior coordination, learning, and perseverance, enabling organizations to manage digital disruption and recover from setbacks (Valizadeh et al., 2022; Elcheroth & Drury, 2020). This supports earlier evidence that collective belief acts as a social resource enhancing both stability and adaptive capacity (Hartwig et al., 2020; Li et al., 2020). In this study, CE emerged as a more influential predictor of OR than direct leadership influence, suggesting that resilience is best achieved through empowered, confident teams that believe in their joint capabilities. These findings align with Djourova et al. (2020), who reported that transformational leadership indirectly improves well-being and resilience through enhanced efficacy beliefs.

Furthermore, the mediating effect of CE between DTL and OR reinforces that resilience is not merely a product of leadership vision but a collective outcome of shared belief and coordinated action. Leaders who integrate digital transformation strategies with empowerment practices foster trust and engagement, which amplify CE and, consequently, OR (Salanova et al., 2022; Zhang & Liu, 2025). This is particularly significant for ICT organizations, where innovation, agility, and adaptability are driven by collaboration and mutual confidence (Albannai et al., 2024; Gutu et al., 2022). The results also parallel findings from Nurhayati and Astono (2024), who emphasized that digital transformation enhances business resilience through the mediation of dynamic organizational capabilities. Overall, the findings highlight that Digital Transformational Leadership strengthens Organizational Resilience primarily through Collective Efficacy, reflecting a human-centered digital transformation approach. By cultivating confidence, shared purpose, and innovation within teams, leaders can create resilient cultures capable of sustaining performance under uncertainty. In the Saudi ICT sector, where technological advancement is a strategic national priority, fostering CE through digital leadership represents a vital pathway for achieving long-term adaptability, innovation, and sustainable growth in line with Vision 2030 objectives.

6. Conclusion

This study explored the mediating role of collective efficacy in the relationship between digital transformational leadership and organizational resilience within the Saudi Arabian ICT sector. The results confirmed that digital transformational leadership exerts a strong positive effect on both collective efficacy and organizational resilience, highlighting the importance of leadership behaviors that integrate digital competence, innovation, and employee empowerment. Furthermore, the findings revealed that collective efficacy not only enhances resilience directly but also mediates the influence of leadership on resilience, indicating that employees' shared confidence and belief in their collective abilities play a decisive role in how organizations adapt and thrive amid digital transformation. The conclusion drawn from this research is that organizational resilience is not solely a structural or strategic capability it is also a collective psychological outcome influenced by leadership practices that build unity, trust, and purpose among employees.

When digital leaders foster empowerment, collaboration, and a shared vision, they strengthen team cohesion and belief in joint capabilities, which are essential for sustaining productivity and innovation during change. The study underscores that collective efficacy represents a key internal resource that transforms leadership vision into tangible resilience outcomes.For the Saudi ICT sector, these insights hold particular significance as the nation advances its Vision 2030 digital transformation agenda. Organizations seeking long-term competitiveness and adaptability must prioritize leadership development programs that cultivate digital fluency, encourage employee engagement, and reinforce collective confidence. By empowering teams to believe in their shared capacity to overcome

challenges, digital transformational leaders can create resilient organizations capable of continuous growth, innovation, and strategic alignment with national objectives.

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