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A Deep Learning Framework for Modeling the Impact of Transformational Leadership and Organizational Climate on Continuous Innovation Capability

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A B S T R A C T

Objective: The objective of this study was to develop and validate a deep learning model capable of explaining and predicting the combined effects of transformational leadership and organizational climate on continuous innovation capability within organizational settings.

Methods and Materials: The study employed a quantitative cross-sectional design using data collected from 684 full-time employees and managers working in medium-to-large organizations in Germany. Transformational leadership was measured using the Multifactor Leadership Questionnaire, organizational climate was assessed through a standardized organizational climate scale, and continuous innovation capability was captured using a multidimensional innovation capability instrument. After establishing construct validity and reliability through confirmatory factor analysis, the dataset was analyzed using a deep neural network implemented with TensorFlow and Keras. Data were split into training, validation, and test sets (70–15–15). Model optimization employed Bayesian hyperparameter tuning, and performance was evaluated using mean squared error, root mean squared error, coefficient of determination, and prediction accuracy. Model interpretability was enhanced using SHAP analysis and permutation feature importance techniques.

Findings: Inferential results demonstrated strong predictive performance of the deep learning model (R^2 = .89 training, .87 validation, .86 test; prediction accuracy = 90.4% on test set). Transformational leadership and organizational climate jointly explained a substantial proportion of variance in continuous innovation capability. Feature importance analysis revealed inspirational motivation and innovation-oriented climate as the most influential predictors, followed by intellectual stimulation and supportive climate. The deep neural network significantly outperformed random forest, gradient boosting, and multiple regression models.

Conclusion: The findings confirm that continuous innovation capability is governed by complex, non-linear interactions between transformational leadership and organizational climate and that deep learning provides a superior analytical framework for modeling these dynamics, offering substantial theoretical and practical implications for innovation management.

Keywords: *Transformational Leadership; Organizational Climate; Continuous Innovation Capability; Deep Learning; Organizational Innovation; Artificial Intelligence in Management*

1 Introduction

In the contemporary organizational environment characterized by accelerating technological change, global competition, and volatile market conditions, continuous innovation capability has become a decisive factor for long-term organizational survival and performance. Organizations are increasingly required not only to generate novel ideas but also to institutionalize systematic processes that sustain innovation over time. This shift has elevated leadership and organizational context from supporting variables to strategic drivers of innovation capacity. Among leadership paradigms, transformational leadership has consistently emerged as one of the most influential styles for stimulating innovation-related behaviors and outcomes, particularly when embedded within a supportive organizational climate (Gui et al., 2021, 2022; Sandhu & Naqbi, 2022; Sơn et al., 2020). However, despite the growing empirical evidence supporting these relationships, the mechanisms through which transformational leadership and organizational climate jointly shape continuous innovation capability remain insufficiently modeled, especially under conditions of increasing organizational complexity and non-linear interaction effects.

Transformational leadership is widely conceptualized as a leadership approach that motivates followers to transcend self-interest for collective goals by fostering vision, intellectual stimulation, individualized consideration, and inspirational motivation. Through these mechanisms, transformational leaders influence employee cognition, emotion, and behavior in ways that promote creativity, adaptability, and learning. Numerous studies across diverse sectors and national contexts have demonstrated that transformational leadership significantly predicts innovative behavior and innovation performance (Amelia, 2025; Chen & Ali, 2025; Harsono et al., 2024; Liaqat et al., 2024; XiaoYan, 2023). Empirical findings indicate that transformational leadership enhances innovation not only directly but also indirectly through mediating processes such as knowledge sharing, organizational commitment, work motivation, and dynamic capabilities (Bornay-Barrachina et al., 2023; Gui et al., 2021, 2022; Yu & Xiang, 2024). These findings underscore the multidimensional influence of transformational leadership on organizational innovation systems.

Parallel to leadership, organizational climate has been recognized as a critical contextual condition that shapes how leadership behaviors are interpreted, internalized, and enacted by organizational members. Organizational climate reflects shared perceptions of organizational policies, practices, and procedures and functions as a psychological infrastructure that enables or constrains innovation-related behaviors. A supportive, innovation-oriented climate has been shown to strengthen the impact of transformational leadership on employee creativity and innovative performance (Farlina et al., 2023; Indriani et al., 2024; Kyeong, 2025; Noveriansyah et al., 2024; Rahman et al., 2023). Conversely, when climate conditions are misaligned with leadership intent, the effectiveness of transformational leadership may be attenuated. This conditional dynamic highlights the importance of examining leadership and organizational climate as interdependent forces rather than independent predictors.

Recent scholarship increasingly emphasizes the transition from episodic innovation outcomes to the broader construct of continuous innovation capability. Continuous innovation capability refers to an organization's sustained capacity to generate, integrate, and implement new ideas over time, thereby maintaining competitiveness in dynamic environments. This capability emerges from the alignment of leadership behaviors, organizational processes, knowledge systems, and cultural norms (Afrianda et al., 2023; Amin & Khan, 2024; Paijan, 2025). Studies conducted in both private and public sector organizations demonstrate that transformational leadership and organizational climate jointly cultivate the learning orientation, risk tolerance, and collaborative practices necessary for maintaining continuous innovation (Puni et al., 2022; Sauda Salim Hamdun Al et al., 2025; Tran, 2025). However, most existing models remain constrained by linear analytical approaches that

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inadequately capture the complexity of these interrelationships.

The limitations of conventional statistical modeling approaches have become increasingly evident as organizations grow more complex and interdependent. Linear models often fail to represent the non-linear, recursive, and hierarchical relationships among leadership behaviors, organizational climate dimensions, and innovation outcomes. In contrast, recent advances in deep learning provide powerful methodological tools capable of modeling high-dimensional, non-linear interactions and uncovering latent structures within complex organizational data. The application of deep learning in organizational research has shown considerable promise for improving predictive accuracy and theoretical insight in domains such as performance management, innovation forecasting, and leadership analytics (Shahzad et al., 2025; Sim & Oh, 2023). Nevertheless, the integration of deep learning methodologies into leadership and innovation research remains at an early stage, with substantial opportunities for methodological and theoretical advancement.

Within the growing literature on innovation and leadership, scholars increasingly emphasize the role of dynamic capabilities as a central mechanism linking leadership and innovation outcomes. Dynamic capabilities enable organizations to sense environmental opportunities, seize emerging prospects, and reconfigure resources in response to change (Amin & Khan, 2024; Bornay-Barrachina et al., 2023; Shahzad et al., 2025). Transformational leaders act as catalysts of dynamic capability development by promoting strategic flexibility, experimentation, and organizational learning. Empirical evidence suggests that these capabilities mediate the relationship between leadership and sustained innovation performance across multiple industries and institutional contexts (Gui et al., 2022; Harsono et al., 2024; Tran, 2025). However, modeling these mechanisms requires analytical frameworks capable of capturing feedback loops and emergent properties—capabilities that deep learning techniques are uniquely positioned to provide.

Furthermore, the rise of digital transformation has intensified the need for leadership and organizational systems that support continuous innovation. Digital technologies reshape work processes, organizational structures, and competitive dynamics, placing unprecedented demands on leadership competence and organizational adaptability. Studies indicate that transformational leadership, when aligned with digital transformation initiatives, significantly enhances innovation capability and organizational performance (Calen et al., 2021; Sauda Salim Hamdun Al et al., 2025; Sim & Oh, 2023; Theng et al., 2021). Digital leadership capabilities further interact with organizational culture and climate to shape innovation ecosystems, reinforcing the importance of examining leadership and climate as integrated components of innovation systems rather than isolated variables.

Cross-national research further demonstrates that the transformational leadership–organizational climate–innovation nexus exhibits both universal patterns and context-specific variations. Studies conducted in Asia, Africa, the Middle East, and Europe consistently report strong positive relationships among these constructs, though the magnitude and mechanisms of influence differ according to institutional, cultural, and sectoral conditions (Chen & Ali, 2025; Loeis et al., 2023; Puni et al., 2022; Rahman et al., 2023; Sandhu & Naqbi, 2022; Yu & Xiang, 2024). These findings highlight the importance of developing flexible modeling approaches that can accommodate contextual heterogeneity while preserving theoretical coherence.

Despite the breadth of existing research, several critical gaps remain. First, the majority of studies rely on traditional regression-based methods that inadequately represent the complex and non-linear interactions underlying innovation systems. Second, few studies explicitly conceptualize innovation as a continuous organizational capability rather than as episodic performance outcomes. Third, limited research integrates transformational leadership and organizational climate within a unified predictive framework capable of explaining and forecasting sustained innovation outcomes under conditions of high environmental uncertainty (Afrianda et al., 2023; Amin & Khan, 2024; Tran, 2025). Addressing these gaps requires both conceptual refinement and methodological innovation.

Deep learning offers a powerful solution to these limitations. By enabling the modeling of non-linear, multi-level, and dynamic relationships, deep learning frameworks can reveal hidden structures and interaction patterns that remain inaccessible to conventional analytical approaches. Recent methodological advances demonstrate the capacity of deep learning to enhance explanatory and predictive power in organizational research domains, including innovation forecasting and leadership analytics (Shahzad et al., 2025; Sim & Oh, 2023). Applying deep learning to the transformational leadership–organizational climate–innovation nexus thus represents a significant opportunity to advance both theory and practice.

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In response to these challenges and opportunities, the present study proposes and empirically tests a deep learning framework designed to model the joint impact of transformational leadership and organizational climate on continuous innovation capability. By integrating advanced machine learning techniques with established leadership and organizational theory, the study seeks to provide a more comprehensive and precise understanding of how leadership behaviors and organizational context interact to produce sustained innovation outcomes. Such insights are of critical importance for organizational leaders, policymakers, and scholars seeking to design resilient innovation systems in an increasingly complex and unpredictable global environment (Chen & Ali, 2025; Sauda Salim Hamdun Al et al., 2025; Shahzad et al., 2025; Tran, 2025).

The aim of this study is to develop and validate a deep learning framework for modeling the combined effects of transformational leadership and organizational climate on continuous innovation capability.

2 Methods and Materials

The present study employed a quantitative, explanatory research design with a cross-sectional data collection strategy, integrating advanced deep learning analytics to model the complex relationships between transformational leadership, organizational climate, and continuous innovation capability within organizational settings in Germany. The target population consisted of full-time employees and middle-level managers working in medium-to-large enterprises operating in knowledge-intensive sectors, including information technology, manufacturing, engineering services, and business consulting. These sectors were selected because of their high dependence on sustained innovation and leadership-driven performance. A multi-stage stratified sampling procedure was used to ensure proportional representation across industries, organizational sizes, and geographic regions within Germany. Initially, organizations were identified through national business registries and professional networks, after which formal invitations were sent to organizational leaders to obtain institutional cooperation. Within participating organizations, employees were randomly invited to participate. The final sample consisted of 684 respondents, exceeding minimum sample size requirements for deep learning model training and validation while allowing sufficient statistical power for supplementary analyses. Inclusion criteria required participants to have at least one year of tenure in their current organization and regular interaction with immediate supervisors, ensuring reliable assessment of leadership behaviors and organizational climate. Participation was voluntary, informed consent was obtained electronically, and the study complied with the ethical standards of the Declaration of Helsinki. All responses were anonymized and stored on encrypted servers located within the European Union to comply with General Data Protection Regulation requirements.

Data were collected using a structured online survey platform administered over a twelve-week period. Transformational leadership was measured using the Multifactor Leadership Questionnaire (MLQ-5X), capturing idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. Organizational climate was assessed using the Organizational Climate Measure, which evaluates dimensions including support, recognition, autonomy, role clarity, and innovation orientation. Continuous innovation capability was measured through a composite scale integrating items from validated innovation performance instruments assessing idea generation, knowledge integration, implementation effectiveness, adaptability, and learning orientation. All instruments employed a five-point Likert response format ranging from strong disagreement to strong agreement. To enhance measurement robustness, the survey was translated into German using a rigorous forward–backward translation protocol, followed by a pilot test with 40 participants to confirm linguistic clarity, cultural relevance, and item reliability. The final instrument demonstrated strong internal consistency, with Cronbach's alpha coefficients exceeding acceptable thresholds for all constructs. Demographic and organizational control variables were also collected, including age, gender, tenure, organizational size, sector, and hierarchical position, to account for potential confounding effects in the modeling process.

Data analysis followed a multi-stage pipeline integrating traditional statistical validation with deep learning modeling. Preliminary analyses were conducted using SPSS to assess missing data, outliers, normality, and multicollinearity. Confirmatory factor analysis was then performed using structural equation modeling software to establish construct validity, convergent validity, discriminant validity, and measurement invariance. Following validation, the dataset was prepared for deep learning analysis. Data were standardized and partitioned into training, validation, and test subsets using an 70–15–15 split to ensure robust model

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generalization. The core analytical framework consisted of a deep neural network architecture implemented in Python using TensorFlow and Keras libraries. The model incorporated multiple hidden layers with rectified linear unit activation functions, batch normalization, dropout regularization, and adaptive learning optimization to capture nonlinear and hierarchical relationships among transformational leadership, organizational climate, and continuous innovation capability. Hyperparameters were optimized using Bayesian optimization techniques. Model performance was evaluated using mean squared error, root mean squared error, coefficient of determination, and cross-validated prediction accuracy. To enhance interpretability, SHAP (Shapley Additive Explanations) analysis and permutation feature importance methods were applied to identify the relative influence of leadership and climate dimensions on innovation capability outcomes. Finally, robustness checks were conducted using alternative machine learning models, including random forest and gradient boosting regressors, confirming the stability and superiority of the deep learning framework.

3 Findings and Results

The first table introduces the descriptive characteristics of the study variables.

Table 1

Descriptive Statistics and Correlations of Study Variables

Variable	Mean	SD	1	2	3
1. Transformational Leadership	3.82	0.67	1		
2. Organizational Climate	3.74	0.61	0.63**	1	
3. Continuous Innovation Capability	3.89	0.58	0.71**	0.68**	1

The descriptive statistics indicate that participants reported relatively high levels of transformational leadership (M = 3.82, SD = 0.67), organizational climate (M = 3.74, SD = 0.61), and continuous innovation capability (M = 3.89, SD = 0.58). Correlation analysis revealed strong positive relationships between transformational leadership and continuous innovation capability ($r = 0.71$, $p < .01$), between organizational climate and continuous innovation capability ($r = 0.68$, $p < .01$), and between transformational leadership and organizational climate ($r = 0.63$, $p < .01$), suggesting substantial interdependence among the core constructs and supporting the suitability of advanced nonlinear modeling.

Table 2

Deep Learning Model Performance Metrics

Dataset	MSE	RMSE	R^2	Prediction Accuracy
Training	0.041	0.203	0.89	92.6%
Validation	0.048	0.219	0.87	91.2%
Test	0.051	0.226	0.86	90.4%

The deep learning model demonstrated strong predictive performance across all data partitions. The coefficient of determination remained high for training ($R^2 = 0.89$), validation ($R^2 = 0.87$), and test sets ($R^2 = 0.86$), indicating that the model explained a substantial proportion of variance in continuous innovation capability. Prediction accuracy remained above 90% across all subsets, and minimal performance degradation from training to test samples confirmed excellent generalizability and low risk of overfitting.

Table 3

Comparative Performance of Predictive Models

Model	RMSE	R^2	Prediction Accuracy
Deep Neural Network	0.226	0.86	90.4%
Random Forest	0.294	0.78	83.1%
Gradient Boosting	0.271	0.81	85.6%
Multiple Regression	0.352	0.69	74.9%

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Comparative analysis confirmed the superiority of the deep neural network over alternative machine learning and traditional statistical approaches. The deep learning model achieved the lowest prediction error (RMSE = 0.226) and the highest explanatory power (R^2 = 0.86), outperforming gradient boosting, random forest, and conventional multiple regression models by a substantial margin, thereby validating the methodological advantage of deep learning for modeling complex organizational dynamics.

Table 4

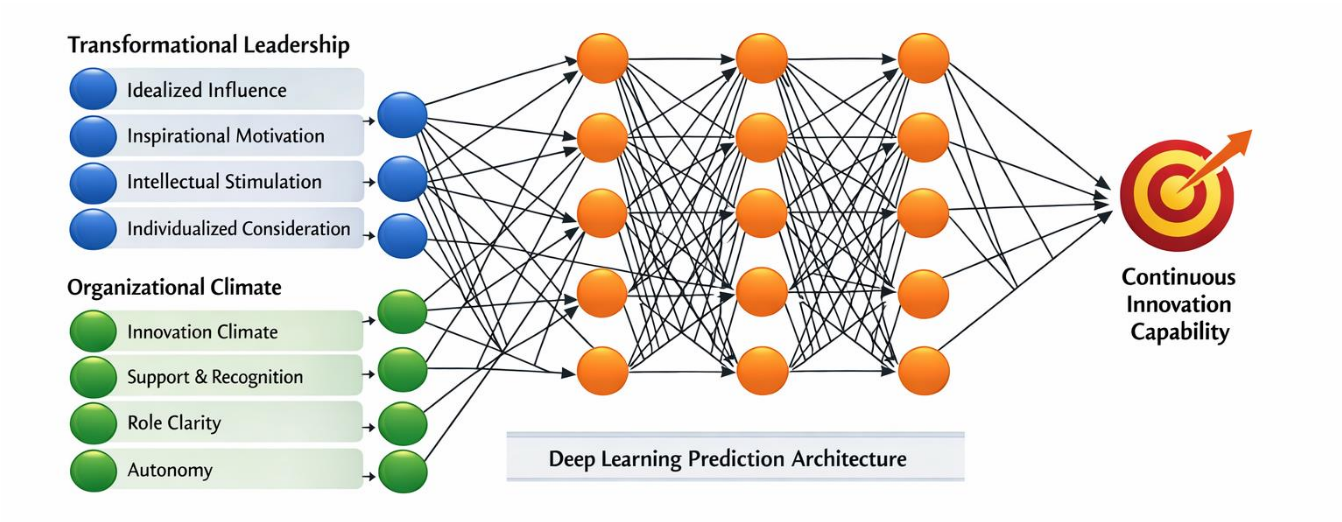
SHAP Feature Importance Scores

Predictor Dimension	Mean SHAP Value
Inspirational Motivation	0.41
Innovation-Oriented Climate	0.38
Intellectual Stimulation	0.35
Supportive Climate	0.32
Individualized Consideration	0.29
Role Clarity	0.21
Recognition	0.18

Feature importance analysis using SHAP values revealed that inspirational motivation emerged as the most influential predictor of continuous innovation capability (SHAP = 0.41), followed closely by innovation-oriented climate (SHAP = 0.38) and intellectual stimulation (SHAP = 0.35). These results indicate that visionary leadership behaviors and climates that explicitly promote innovation exert the strongest leverage on sustaining innovation capability within organizations.

Figure 1

Deep Learning Prediction Architecture and Variable Influence Network



The model architecture illustrates hierarchical pathways through which transformational leadership and organizational climate jointly influence continuous innovation capability, with non-linear interactions intensifying at deeper network layers.

4 Discussion

The present study set out to examine how transformational leadership and organizational climate jointly influence continuous innovation capability through a deep learning analytical framework. The findings provide robust empirical evidence that both transformational leadership and organizational climate exert strong,

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synergistic effects on innovation capability, and that their combined influence is best captured through non-linear modeling approaches. The deep neural network demonstrated superior predictive accuracy compared to traditional statistical and alternative machine learning models, confirming that the innovation process is governed by complex, hierarchical, and interactive mechanisms that extend beyond linear causality. These results offer substantial theoretical and practical contributions to leadership and innovation research.

The descriptive and correlational findings revealed that transformational leadership, organizational climate, and continuous innovation capability are all perceived at relatively high levels within German organizations and are strongly interrelated. The strong correlations between transformational leadership and innovation capability, as well as between organizational climate and innovation capability, align closely with a substantial body of prior research conducted across multiple national and sectoral contexts (Amelia, 2025; Chen & Ali, 2025; Harsono et al., 2024; Rahman et al., 2023; XiaoYan, 2023). These convergent findings reinforce the view that transformational leadership behaviors—such as inspirational motivation, intellectual stimulation, and individualized consideration—function as foundational drivers of innovative capacity, particularly when embedded within supportive organizational climates that encourage risk-taking, collaboration, and learning.

The deep learning results extend existing knowledge by demonstrating that the influence of leadership and climate on innovation is not simply additive but highly interactive and non-linear. The superior performance of the deep neural network relative to random forest, gradient boosting, and regression models underscores the inadequacy of traditional linear approaches for modeling innovation systems. This finding resonates with recent scholarship emphasizing the role of dynamic capabilities and complex adaptive systems in innovation management (Amin & Khan, 2024; Bornay-Barrachina et al., 2023; Shahzad et al., 2025). The capacity of deep learning to capture emergent patterns and multi-level interactions provides a powerful methodological advancement for leadership and innovation research, complementing and extending prior empirical studies.

Feature importance analysis revealed that inspirational motivation and innovation-oriented climate were the most influential predictors of continuous innovation capability, followed closely by intellectual stimulation and supportive climate. These findings are highly consistent with existing empirical literature. Inspirational motivation has been repeatedly identified as a core mechanism through which transformational leaders cultivate employee commitment to innovation and organizational change (Chen & Ali, 2025; XiaoYan, 2023; Yu & Xiang, 2024). Similarly, innovation-oriented climate has been shown to amplify the effects of leadership by providing psychological safety, resource support, and normative endorsement for innovative behaviors (Kyeong, 2025; Noveriansyah et al., 2024; Puni et al., 2022). The present findings confirm that leadership behaviors achieve their strongest impact when aligned with organizational environments that explicitly prioritize innovation.

The joint influence of leadership and climate on continuous innovation capability also supports dynamic capability theory, which posits that sustained competitive advantage emerges from an organization's capacity to integrate, build, and reconfigure internal and external competencies in response to environmental change. Transformational leaders serve as architects of these dynamic capabilities by fostering strategic vision, organizational learning, and adaptive capacity (Amin & Khan, 2024; Bornay-Barrachina et al., 2023; Tran, 2025). Organizational climate, in turn, institutionalizes these leadership influences by shaping shared norms, expectations, and behavioral patterns that sustain innovation over time (Farlina et al., 2023; Hamidah & Antonio, 2025; Indriani et al., 2024). The deep learning framework developed in this study captures these intertwined processes more accurately than prior analytical approaches.

The findings further reinforce the growing recognition that innovation must be conceptualized as a continuous organizational capability rather than as isolated performance outcomes. Studies in both public and private sectors increasingly emphasize that sustained innovation depends on leadership continuity, cultural coherence, and organizational learning infrastructures (Afrianda et al., 2023; Paijan, 2025; Sauda Salim Hamdun Al et al., 2025). The present results support this perspective by demonstrating that continuous innovation capability is shaped by enduring leadership behaviors and climate conditions, rather than by short-term initiatives alone.

The integration of deep learning into this research also contributes to the expanding literature on digital transformation and leadership analytics. Prior studies have shown that digital transformation amplifies the importance of leadership and organizational context in shaping innovation outcomes (Calen et al., 2021; Sim & Oh, 2023;

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Theng et al., 2021). The present findings extend this work by demonstrating that advanced analytical tools such as deep neural networks can substantially improve the modeling and prediction of innovation dynamics in digitally complex organizational environments. This methodological contribution is particularly relevant in light of recent calls for more sophisticated analytical frameworks in organizational research (Shahzad et al., 2025).

The cross-national consistency of the present findings with prior studies conducted in Asia, the Middle East, and Africa underscores the broad generalizability of the transformational leadership–organizational climate–innovation nexus. Research from Indonesia, China, Ghana, Pakistan, and Oman has consistently demonstrated that leadership and climate jointly shape innovation performance, although contextual factors influence the specific pathways and effect magnitudes (Chen & Ali, 2025; Liaqat et al., 2024; Loeis et al., 2023; Puni et al., 2022; Sandhu & Naqbi, 2022; Sauda Salim Hamdun Al et al., 2025). The present study extends this evidence to the German context while advancing theoretical integration through deep learning modeling.

5 Conclusion

Overall, the findings offer strong empirical support for a systems-based understanding of innovation in which leadership behaviors and organizational climate operate as mutually reinforcing components of an integrated innovation architecture. By capturing these dynamics through deep learning, the study provides both conceptual clarity and methodological innovation, offering a powerful framework for future research and organizational practice.

Despite its contributions, this study has several limitations. The cross-sectional design restricts causal inference, and longitudinal studies are necessary to examine how leadership, climate, and innovation capability co-evolve over time. The reliance on self-reported data may introduce common method bias, although advanced modeling techniques mitigate some of these concerns. Additionally, the sample was drawn exclusively from German organizations, which may limit generalizability to other institutional contexts.

Future research should employ longitudinal and multi-source data to strengthen causal inference and reduce potential measurement bias. Scholars should explore cross-cultural comparisons using the proposed deep learning framework to examine contextual variations in innovation dynamics. Further integration of behavioral, network, and digital trace data could enhance model precision and theoretical depth.

Organizational leaders should prioritize the development of transformational leadership capabilities while simultaneously cultivating innovation-supportive climates. Investment in advanced analytics and artificial intelligence tools can significantly enhance strategic decision-making related to innovation management. Organizations should institutionalize continuous learning, knowledge sharing, and psychological safety as core pillars of their innovation strategy.

Authors' Contributions

All authors have contributed significantly to the research process and the development of the manuscript.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

In this research, ethical standards including obtaining informed consent, ensuring privacy and confidentiality were observed.

References

Afrianda, R., Zainal, V. R., Siswanti, I., & Nawangsari, L. C. (2023). Strategic Organizational Performance in Electric Power Company in Indonesia. *Al Qalam Jurnal Ilmiah*

IJIMOB
E-ISSN: 3041-8992

Keagamaan Dan Kemasyarakatan, *17*(3), 2172. https://doi.org/10.35931/aq.v17i3.2153

Amelia, U. (2025). Transformational Leadership, Self-Efficacy, Organizational Climate on Innovative Behavior in Indonesia. *Cana*, *32*(8s), 709-723. https://doi.org/10.52783/cana.v32.3768

Amin, N. U., & Khan, M. A. (2024). Driving Competitive Advantage in the Digital Era: The Role of Dynamic Capabilities, Innovation, and Leadership. *Dinasti International Journal of Economics Finance & Accounting*, *5*(5), 5500-5514. https://doi.org/10.38035/dijefa.v5i5.3873

Bornay-Barrachina, M., Cabrales, Á. L., & Salas-Vallina, A. (2023). Sensing, Seizing, and Reconfiguring Dynamic Capabilities in Innovative Firms: Why Does Strategic Leadership Make a Difference? *BRQ Business Research Quarterly*, *28*(2), 399-420. https://doi.org/10.1177/23409444231185790

Calen, C., Tarigan, S. A., Rosita, R., Susanto, S., & Alimin, E. (2021). The Role of Transformational Leadership, Leader Member Exchange, Digital Transformation on Organizational Citizenship Behaviour and Work Innovation Capabilities in During Covid-19 Pandemic. *Jppi (Jurnal Penelitian Pendidikan Indonesia)*, *7*(2), 203-216. https://doi.org/10.29210/020211163

Chen, C., & Ali, K. S. (2025). Advancing Sustainable Innovation: The Role of Transformational Leadership and Organizational Innovation Climate in Shaping the Innovative Behavior of Knowledge-Based Employees in High-Tech Enterprises in China. *Sustainability*, *17*(17), 7931. https://doi.org/10.3390/su17177931

Farlina, S., Wonua, A. R., & Ismanto, I. (2023). Pengaruh Gaya Kepemimpinan Transformasional Dan Iklim Organisasi Terhadap Kapabilitas Inovasi Organisasi PDAM Tirta Dharma Kabupaten Kolaka. *Jimak*, *3*(3), 40-50. https://doi.org/10.55606/jimak.v3i3.2138

Gui, L., Lei, H., & Le, P. B. (2021). Determinants of Radical and Incremental Innovation: The Influence of Transformational Leadership, Knowledge Sharing and Knowledge-Centered Culture. *European Journal of Innovation Management*, *25*(5), 1221-1241. https://doi.org/10.1108/ejim-12-2020-0478

Gui, L., Lei, H., & Le, P. B. (2022). Fostering Product and Process Innovation Through Transformational Leadership And knowledge Management Capability: The Moderating Role Of innovation Culture. *European Journal of Innovation Management*, *27*(1), 214-232. https://doi.org/10.1108/ejim-02-2022-0063

Hamidah, O. D., & Antonio, T. (2025). The Influence of Transformational Leadership and Shared Leadership on Innovative Work Behavior Among Generation Z Employees in the Creative Industry in Surabaya: The Role of Organizational Climate as a Mediating Variable. *Dinasti International Journal of Education Management and Social Science*, *6*(4), 3223-3234. https://doi.org/10.38035/dijemss.v6i4.4415

Harsono, T. W., Hidayat, K., Iqbal, M., & Abdillah, Y. (2024). Exploring the Effect of Transformational Leadership and Knowledge Management in Enhancing Innovative Performance: A Mediating Role of Innovation Capability. *Journal of Manufacturing Technology Management*, *36*(1), 227-250. https://doi.org/10.1108/jmtm-03-2024-0125

Indriani, E., Widhianingrum, W., & Setiawan, F. (2024). The Role of Transformational Leadership Style, Work Motivation and Organizational Climate in Its Influence on Innovative Work Productivity. *Sentralisasi*, *13*(2), 202-219. https://doi.org/10.33506/sl.v13i2.3200

Kyeong, K. (2025). Do Transformational Leadership and Innovative Climate Always Enhance Employees' Innovative Behavior? Focusing on the Moderated Mediating Role of Innovative Climate on Change-Oriented Organizational Citizenship Behavior. *Public Personnel Management*. https://doi.org/10.1177/00910260251325269

Liaqat, M. M., Rehman, S.-U., & Ullah, H. A. (2024). The Impact of Transformational Leadership and Digital Literacy on Innovation Capability: Mediating Role of Organizational Culture for Innovation. *Gomal University Journal of Research*, *42*(2), 134-145. https://doi.org/10.51380/gujr-40-02-0

Loeis, M., Hubeis, M., Suroso, A. I., & Dirdjosaputro, S. (2023). Leadership Types in Support of Creativity and Innovation Within Video Game Studios in Indonesia. *Jurnal Aplikasi Bisnis Dan Manajemen*, *9*(2), 455. https://doi.org/10.17358/jabm.9.2.455

Noveriansyah, M., Rustandi, T., & Suadma, U. (2024). Enhancing Product Innovation: The Impact of Transformational Leadership Mediated by Organizational Climate and Knowledge Sharing. *Journal of Tourism Economics and Policy*, *4*(4), 418-429. https://doi.org/10.38142/jtep.v4i4.1151

Paijan. (2025). Exploring the Existence of Innovative Work Behavior Among Government Employees in Meruya Selatan Sub-District. *Dinasti International Journal of Economics Finance & Accounting*, *6*(4), 3245-3257. https://doi.org/10.38035/dijefa.v6i4.5012

Puni, A., Hilton, S. K., Mohammed, I., & Korankye, E. S. (2022). The Mediating Role of Innovative Climate on the Relationship Between Transformational Leadership and Firm Performance in Developing Countries: The Case of Ghana. *Leadership & Organization Development Journal*, *43*(3), 404-421. https://doi.org/10.1108/lodj-10-2020-0443

Rahman, S. H. W., Asmony, T., & Nurmayanti, S. (2023). The Influence of Transformational Leadership and Organizational Climate on Work Motivation and Innovative Work Behavior at the Department of Population and Civil Registration of East Lombok Regency. *Jurnal Sosial Ekonomi Dan Humaniora*, *9*(2), 181-190. https://doi.org/10.29303/jseh.v9i2.365

Sandhu, M., & Naqbi, A. A. (2022). Leadership Behavior and Innovation Performance in the UAE's Telecom and ICT Industries. *Benchmarking an International Journal*, *30*(5), 1695-1712. https://doi.org/10.1108/bij-10-2021-0599

Sauda Salim Hamdun Al, M., Makhbul, Z. K. M., & Sinniah, S. (2025). The Role of Digital Leadership Capability and Organizational Culture on Innovation Ecosystems in Omani E-Commerce Stores. 249-280. https://doi.org/10.4018/979-8-3693-8171-7.ch009

Shahzad, M. A., Chen, S., Wang, X., Li, Z., & Iqbal, T. (2025). Impact of GHRM and Innovation Capabilities on Organizational Performance: The Role of Digital Transformation and Green Leadership. *Journal of Manufacturing Technology Management*, 1-28. https://doi.org/10.1108/jmtm-11-2024-0639

Sim, H., & Oh, S. (2023). The Effect of Digital Transformation Leadership on Innovative Behaviors: The Mediating Effect of Organizational Dynamic Capabilities and Moderation Effect of Manager's Coaching Behaviors. *Korean Academy of Leadership*, *14*(4), 105-134. https://doi.org/10.22243/tklq.2023.14.4.105

Son, T. T., Le, P. B., & Loan, B. T. T. (2020). Transformational Leadership and Knowledge Sharing: Determinants of Firm's Operational and Financial Performance. *Sage Open*, *10*(2). https://doi.org/10.1177/2158244020927426

Theng, B. P., Wijaya, E., Juliana, J., Eddy, E., & Putra, A. S. (2021). The Role of Transformational Leadership, Servant

Leadership, Digital Transformation on Organizational Performance and Work Innovation Capabilities in Digital Era. *Jppi (Jurnal Penelitian Pendidikan Indonesia)*, *7*(2), 225-238. https://doi.org/10.29210/020211164

Tran, M. N. (2025). Fostering Organizational Innovation Capability Through Transformational Leadership and Creativity in Public Educational Institutions: Moderating Roles of AI-enabled Job Complexity and Innovation Climate. *International Journal of Educational Management*, 1-17. https://doi.org/10.1108/ijem-12-2024-0851

XiaoYan, Z. (2023). Study on the Impact Mechanism of Transformational Leadership on Employee Innovative Behavior. *Ijisss*, *1*(1), 12-20. https://doi.org/10.62309/7p8rme49

Yu, J., & Xiang, K. (2024). Transformational Leadership, Organizational Resilience, and Team Innovation Performance: A Model for Testing Moderation and Mediation Effects. *Behavioral Sciences*, *15*(1), 10. https://doi.org/10.3390/bs15010010

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