



Impact of Transformational Leadership on Innovative Work Behavior

*Jehanzeb Khan¹, Dr. Imran Khan², Shahzad Anwar³, Atta Ur Rahman⁴

1. PhD Scholar at Qurtuba University of Science & IT, Peshawar, Pakistan
*Corresponding author: jehanzeb190@gmail.com
2. Professor / HOD, Department of Management Sciences, Qurtuba University of Science & IT, Peshawar, Pakistan, Email: imk_mgt@yahoo.com
3. Assistant Professor, Faculty of Economics, Kardan University, Kabul, Afghanistan
Email: s.anwar@kardan.edu.af
4. PhD Scholar at School of Computer Science & Software, Nanjing University of Information Science and Technology (NUIST), Nanjing, China
Email: 202451200014@nuist.edu.cn, ORCID: 0009-0005-0427-607

Abstract

The purpose of this paper is to investigate the relationship between transformational leadership and innovative work behavior and to examine the unique contributions of its four dimensions—idealized influence, inspirational motivation, individualized consideration, and intellectual stimulation. It further seeks to compare these dimensions to identify which leadership behavior demonstrates the largest unique relationship with innovative work behavior. Using data collected from 400 employees working in small and medium-sized enterprises (SMEs) in Pakistan through a cross-sectional survey, the results were analyzed using correlation and regression analyses. The findings indicate that overall transformational leadership is positively and significantly associated with innovative work behavior. All four dimensions also demonstrate positive and statistically significant unique relationships with innovative work behavior, with inspirational motivation producing the largest observed standardized coefficient. Supplementary pairwise comparisons showed that inspirational motivation was significantly larger than idealized influence but did not differ significantly from individualized consideration or intellectual stimulation. The findings highlight the value of examining transformational leadership at the dimension level and suggest a balanced transformational leadership approach for fostering employees' innovative work behavior.

Keywords: Transformational Leadership, Innovative Work Behavior, Inspirational Motivation Leadership Dimensions, Employee Innovation

Introduction

Innovation at the employee level is increasingly important because organizations rarely innovate through formal research and development systems alone. Employees notice operational problems, generate alternatives, mobilize support, and translate ideas into changes in products, services, routines, or work methods. Innovative work behavior therefore extends beyond creativity: it includes the intentional generation, promotion, and implementation of novel and useful ideas (De Jong & Den Hartog, 2010; Janssen, 2000). Reviews of the field show that innovative work behavior is shaped by a combination of personal, job, team, and organizational influences rather than by a single antecedent (AlEssa & Durugbo, 2022; Hughes et al., 2018). Leadership is especially relevant because innovation

often requires employees to question established routines, accept uncertainty, and invest effort in activities whose outcomes are not guaranteed. Transformational leadership has become one of the most frequently examined leadership approaches in research on employee creativity and innovation. Transformational leaders articulate a compelling collective purpose, serve as credible role models, encourage followers to question assumptions, and provide individualized developmental attention. The four commonly recognized dimensions are idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Avolio et al., 1999; Bass & Riggio, 2006). These dimensions are conceptually related but behaviorally distinguishable. Idealized influence centers on exemplary and values-based role modeling; inspirational motivation communicates an energizing future-oriented vision; intellectual stimulation encourages reframing and experimentation; and individualized consideration addresses followers' distinct developmental needs. A substantial empirical literature supports a positive relationship between transformational leadership and innovative work behavior. Studies have linked transformational leadership with idea generation, knowledge sharing, psychological empowerment, motivation to learn, innovation climate, creativity, and the implementation of new ideas (Afsar et al., 2014; Afsar et al., 2019; Afsar & Umrani, 2020; Choi et al., 2016; Stanescu et al., 2021). Evidence also extends to small and medium-sized enterprises and non-Western settings, where leadership may be particularly consequential because formal innovation systems and specialist resources can be limited (Knezović & Drkić, 2021). More recent studies continue to report positive transformational leadership-innovation relationships through motivational and relational mechanisms (Saif et al., 2024; Vu et al., 2025). A 2026 meta-analytic review of 174 publications and 74,323 participants estimated a positive overall association between transformational leadership and innovative workplace behavior, while also showing that the magnitude of the relationship varies across cultures and psychological mechanisms (Sanlioz & Yildiz, 2026). The maturity of this literature changes the most useful research question. It is no longer sufficient simply to ask whether transformational leadership is associated with innovative work behavior. Transformational leadership is multidimensional, yet many studies aggregate the dimensions into a single score. Sanlioz and Yildiz (2026), for example, explicitly note that many empirical studies treat transformational leadership as unidimensional despite its multidimensional theoretical structure. Meta-analytic work on transformational leadership sub-dimensions has also shown that the dimensions can display different relationships with leader attributes and performance outcomes (Deinert et al., 2015). Consequently, an overall transformational leadership coefficient can be theoretically informative while remaining managerially imprecise: it indicates that transformational leadership matters, but not which specific leadership behaviors carry the greatest unique statistical contribution to an employee outcome.

This issue is especially relevant for innovative work behavior because the four dimensions plausibly support different stages and psychological requirements of innovation. Idealized influence may build trust and identification that make employees more willing to take interpersonal risks. Inspirational motivation can attach meaning and collective purpose to innovation efforts. Intellectual stimulation directly invites employees to question assumptions and search for alternative solutions. Individualized consideration can provide the coaching, feedback, and developmental support needed to persist with uncertain ideas. Because these functions differ, there is no theoretical necessity for their coefficients to be identical. A dimension-level analysis can therefore add specificity to a literature dominated by aggregate transformational leadership effects. The present study addresses this need by examining overall transformational leadership and the four dimensions of idealized influence, inspirational motivation, individualized consideration, and intellectual stimulation in relation to innovative work behavior. The analytical file for this manuscript contains 400 complete

cases and reports descriptive statistics, reliability, factorability diagnostics, common-method-bias diagnostics, correlations, multicollinearity statistics, and regression coefficients. The central contribution is comparative rather than causal: the study evaluates whether each dimension is positively associated with innovative work behavior and identifies the dimension with the largest standardized coefficient in the fitted multivariable model. Because previous studies have rarely reported formal pairwise tests comparing the coefficients of transformational leadership dimensions, the present study supplements the dimension-level regression with direct coefficient-comparison tests to distinguish observed coefficient ranking from statistical differences. This study is differentiated from the author's previously published work, which examined the aggregate transformational leadership-innovative work behavior relationship together with psychological empowerment and proactive personality (Khan et al., 2026). This study focuses on decomposition of transformational leadership and comparative dimension-level prediction. This distinction is conceptually meaningful because it asks a different question: not primarily how or when transformational leadership relates to innovation, but which constituent transformational leadership behaviors show the strongest unique relationship with innovative work behavior in the present sample. Accordingly, the study pursues two objectives. First, it tests the association between overall transformational leadership and innovative work behavior. Second, it estimates the unique standardized coefficients of the four transformational leadership dimensions in a common regression model and interprets their relative pattern. The article contributes to leadership research by treating transformational leadership as a differentiated behavioral system rather than only a global score; to innovation research by identifying leadership behaviors linked to employee-level idea generation and implementation; and to management practice by translating a broad leadership style into more actionable behavior categories.

Research Gap, Novelty, and Expected Contribution

The research gap is not the absence of evidence linking transformational leadership with innovation; that association is already well established. The more precise gap is behavioral resolution. Transformational leadership theory is explicitly multidimensional, yet many innovation studies operationalize it as one global score. A recent meta-analytic review notes that unidimensional treatment remains common despite the four-component theoretical structure (Sanlioz & Yildiz, 2026). Research focused on leadership components also demonstrates that sub-dimensions can display different relationships with outcomes (Deinert et al., 2015; Sethibe & Steyn, 2017). Accordingly, aggregation can hide which leader behaviors contribute unique explanatory value after the shared variance among dimensions is controlled. The present study contributes in three ways. First, it compares the four transformational leadership dimensions in one simultaneous model rather than inferring their importance from separate bivariate relationships. Second, it distinguishes observed coefficient ranking from statistical superiority by supplementing the reported results with a transparent supplementary coefficient-comparison analysis computed directly from data. Third, it complements the author's earlier mechanism-focused study, which examined psychological empowerment and proactive personality around an aggregate leadership construct (Khan et al., 2026), by asking a substantively different component-level question: which transformational behaviors retain the strongest unique relationship with innovative work behavior?

Research Questions and Objectives

The study is guided by two overarching research questions: (1) Is overall transformational leadership positively associated with innovative work behavior? and (2) when idealized influence, inspirational motivation, individualized consideration, and intellectual stimulation are considered together, what is the pattern of their unique standardized relationships with

innovative work behavior? Correspondingly, the objectives are to test the overall transformational leadership–innovative work behavior relationship, examine the unique relationships of the four transformational leadership dimensions with innovative work behavior, and compare their standardized coefficients.

Literature Review

Innovative Work Behavior

Innovative work behavior refers to intentional employee actions directed toward the creation, introduction, promotion, and implementation of ideas that are new and useful in a work context. De Jong and Den Hartog (2010) conceptualized the construct as a set of connected activities including opportunity exploration, idea generation, championing, and application. Janssen (2000) likewise emphasized that innovative work behavior is broader than creativity because it includes both the production and realization of ideas. This distinction is consequential for leadership research. A leader may stimulate idea generation without necessarily helping employees mobilize support or implement an idea; conversely, a leader may be particularly effective in the implementation phase by legitimizing experimentation and providing resources or encouragement. Systematic and bibliometric reviews portray innovative work behavior as a mature but still expanding field with multiple theoretical traditions and antecedent categories (AlEssa & Durugbo, 2022). Leadership appears repeatedly because employee innovation is often discretionary and socially exposed. New ideas can challenge established routines, imply criticism of current practices, create extra work, or fail publicly. Employees therefore assess not only whether an idea is technically promising but also whether their social environment will tolerate experimentation. Leadership can alter that assessment by signaling whether questioning, initiative, learning from failure, and constructive dissent are legitimate (Hughes et al., 2018). The current study treats innovative work behavior as the dependent construct and does not collapse it into creativity. This is important because recent meta-analytic evidence continues to caution against conflating creativity with innovative behavior (Sanlioz & Yildiz, 2026).

Transformational Leadership as a Multidimensional Construct

Transformational leadership describes leadership behavior that elevates followers' motivation, reframes collective goals, challenges established assumptions, and develops followers' capabilities. The four-factor conceptualization of idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration is well established in transformational leadership scholarship (Avolio et al., 1999; Bass & Riggio, 2006). The dimensions are correlated because they are manifestations of a broader leadership pattern, but treating them as distinguishable can reveal behavioral specificity that is lost in an aggregate score. The importance of sub-dimensions is not merely semantic. Deinert et al. (2015) reviewed the transformational leadership dimensions and demonstrated that sub-dimensions can relate differently to leader personality and performance. This supports a granular analytical approach when the research question concerns the relative salience of specific behaviors. At the same time, correlated dimensions can create multicollinearity if entered together, so a dimension-level regression requires diagnostic assessment. The present analysis explicitly reports tolerance and variance inflation factor values for all four dimensions, allowing the relative coefficients to be interpreted with greater confidence. Social cognitive reasoning helps explain why leadership dimensions can affect employee behavior through partially different routes. Employees learn from modeled behavior, interpret social cues, form expectations about consequences, and regulate their own effort in relation to perceived efficacy and environmental support (Bandura, 1986). Idealized influence provides behavioral modeling; inspirational motivation supplies an interpretive frame and goal meaning;

intellectual stimulation changes the cognitive cues surrounding problem solving; and individualized consideration provides feedback and developmental support. These mechanisms are compatible with the broader evidence that transformational leadership is associated with innovative work behavior through motivational, relational, and collaborative processes (Sanlioz & Yildiz, 2026).

Theoretical Foundation: Social Cognitive Explanation

Social Cognitive Theory provides a parsimonious explanation for why the four leadership dimensions may show different predictive weights. Human behavior is shaped through reciprocal interactions among personal cognition, observed social cues, and environmental conditions (Bandura, 1986). Transformational leaders alter all three. Idealized influence supplies a model of valued conduct; inspirational motivation frames future outcomes as attainable and meaningful; intellectual stimulation changes the cognitive rules surrounding problem definition and experimentation; and individualized consideration provides feedback that can strengthen efficacy and persistence. Innovation is particularly compatible with this framework because employees must both believe that alternative action is possible and infer that the social environment will support the risks involved in generating, championing, and implementing ideas (Hughes et al., 2018). This theoretical lens also cautions against assuming that intellectual stimulation must always dominate merely because its wording is closest to creativity. Innovative work behavior requires motivational persistence and social enactment in addition to novel thinking. Studies have reported mixed or contingent transformational leadership-innovation effects, and research on leadership components has shown that different behaviors can matter under different conditions (Bednall et al., 2018; Pieterse et al., 2010; Sethibe & Steyn, 2017). The appropriate empirical question is therefore comparative: after accounting for overlap among the four dimensions, which behaviors retain unique associations with innovative work behavior in the present sample?

Overall Transformational Leadership and Innovative Work Behavior

Transformational leaders can encourage innovative work behavior by making change purposeful, legitimizing the search for alternatives, providing support for experimentation, and increasing employees' willingness to invest effort beyond prescribed tasks. Empirical research repeatedly documents a positive relationship. Afsar et al. (2014) reported that transformational leadership was positively related to innovative work behavior and examined psychological empowerment as an explanatory mechanism. Afsar et al. (2019) showed that job crafting and knowledge sharing can transmit leadership effects to innovative behavior, while Afsar and Umrani (2020) demonstrated roles for motivation to learn, task complexity, and innovation climate. Stanescu et al. (2021) likewise found a positive transformational leadership-innovative work behavior relationship with psychological empowerment as mediator. More recent work sustains this conclusion across contexts and methods. Vu et al. (2025) found a positive transformational leadership-innovative work behavior relationship in Vietnam, with psychological empowerment explaining part of the relationship. Saif et al. (2024) linked transformational leadership to innovative work behavior through knowledge sharing, while Knezović and Drkić (2021) reported a positive transformational leadership-innovative work behavior relationship in small and medium-sized enterprises. Most decisively, Sanlioz and Yildiz (2026) synthesized cumulative evidence and estimated a positive overall transformational leadership-innovative work behavior effect across a large evidence base. Therefore, the present study expects the aggregate relationship to be positive.

H1: *Overall transformational leadership is positively associated with innovative work behavior.*

Idealized Influence and Innovative Work Behavior

Idealized influence refers to the extent to which a leader functions as a credible, values-consistent role model who earns respect and identification. For innovation, this dimension may matter because employees must often take interpersonal and reputational risks when they question accepted routines. Leaders who demonstrate consistency, confidence, and commitment to collective goals can reduce ambiguity about whether initiative is valued. Role modeling can also shape follower expectations about persistence and responsible risk taking through observational learning (Bandura, 1986). Idealized influence is therefore expected to support innovative work behavior indirectly through trust, identification, and willingness to act in ways that benefit the collective. Studies of transformational leadership commonly incorporate idealized influence as a core component of the leadership pattern linked to innovation (Afsar et al., 2014; Knezović & Drkić, 2021; Stanescu et al., 2021). Yet because aggregate transformational leadership scores combine multiple behaviors, the unique role of idealized influence may be obscured. The current dimension-level model isolates its standardized contribution while controlling for the other dimensions.

H2: *Idealized influence is positively associated with innovative work behavior.*

Inspirational Motivation and Innovative Work Behavior

Inspirational motivation concerns the leader's capacity to communicate an appealing future, express confidence, and connect everyday work with meaningful collective goals. Innovation often imposes short-term uncertainty and additional effort before benefits become visible. An inspiring vision can help employees interpret that effort as purposeful rather than merely disruptive. Transformational leaders can thereby increase the motivational value of idea generation and implementation by linking innovation to a shared identity and desired future state. Evidence on transformational leadership and innovation consistently emphasizes the importance of vision and inspiration. Afsar and Umrani (2020) showed that transformational leadership can support innovative work behavior through motivation to learn and an innovation-supportive climate, while Nguyen et al. (2022) reported a positive relationship between transformational leadership and employee creativity. Recent research likewise notes that clear, compelling visions can enhance the meaning employees attach to innovative effort (Vu et al., 2025). Because inspirational motivation directly addresses meaning, enthusiasm, and goal pursuit, it is expected to show a positive relationship with innovative work behavior.

H3: *Inspirational motivation is positively associated with innovative work behavior.*

Individualized Consideration and Innovative Work Behavior

Individualized consideration captures attention to followers' unique needs, strengths, learning requirements, and professional development. Innovative work is unevenly distributed across employees because people differ in confidence, experience, access to information, and tolerance for uncertainty. Individualized coaching can help employees convert a broad invitation to innovate into specific learning, feedback, and developmental support. This dimension can also communicate that mistakes and developmental needs will be addressed constructively rather than punitively. The mechanism is consistent with evidence that developmental support and empowerment contribute to innovation-related behavior. Transformational leadership has been linked with innovative behavior through psychological empowerment (Pieterse et al., 2010; Stanescu et al., 2021) and through other follower-centered mechanisms (Vu et al., 2025). Bass and Riggio (2006) likewise emphasized individualized consideration as a distinct transformational process. When leaders recognize employees as individuals, provide appropriate challenge, and support their growth, employees may be more willing and better equipped to pursue new work methods.

H4: *Individualized consideration is positively associated with innovative work behavior.*

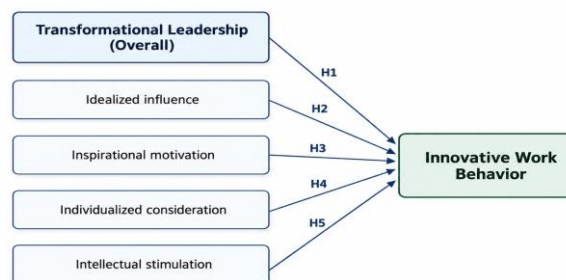
Intellectual Stimulation and Innovative Work Behavior

Intellectual stimulation is the dimension most explicitly connected to cognitive reframing and questioning assumptions. Leaders exhibiting intellectual stimulation invite employees to examine problems from new angles, challenge established procedures, and generate alternatives without automatically penalizing unconventional thinking. These behaviors closely match the early stages of innovative work behavior, particularly opportunity exploration and idea generation, and may also support implementation by encouraging learning when initial solutions fail. Leadership research has repeatedly linked transformational leadership with creativity and innovative problem solving (Hughes et al., 2018; Nguyen et al., 2022; Shafi et al., 2020). Intellectual stimulation should therefore have a direct conceptual connection with innovative work behavior. However, direct conceptual proximity does not guarantee that its standardized coefficient will exceed those of inspirational motivation or individualized consideration, because innovation also requires persistence, social support, and purpose. Testing all four dimensions together permits the data to indicate their unique pattern.

H5: *Intellectual stimulation is positively associated with innovative work behavior.*

Proposed Conceptual Model

Transformational leadership plays an important role in encouraging employees to engage in innovative work behavior. The present study examines both the overall effect of transformational leadership and the individual contributions of its four dimensions: idealized influence, inspirational motivation, individualized consideration, and intellectual stimulation. Figure 1 presents the study model. Hypothesis 1 concerns the overall transformational leadership score, whereas Hypotheses 2-5 concern the four constituent dimensions entered as predictors of innovative work behavior.



Dimension-level model tests the four leadership behaviors simultaneously.

Figure 1. Conceptual model of transformational leadership dimensions and innovative work behavior

H1 tests the overall transformational leadership score; H2-H5 test the four dimensions simultaneously as predictors of innovative work behavior.

Methodology

Participants and Sampling Procedure

A total of 400 employees from small and medium-sized enterprises (SMEs) participated in the final sample. Because a complete sampling frame of all employees across Pakistani SMEs was not available, a multistage non-probability sampling procedure was used rather than an unsupported claim to simple random sampling (Saunders et al., 2023). First, four cities

(Kohat, Lahore, Multan, and Faisalabad) were purposively selected to achieve reasonable geographic spread and organizational access. Second, eligible SMEs within these cities were purposively targeted. Third, employees who were available and willing to participate were sampled, with near-balanced targets across the four cities to limit clustering in any single location. Both managerial and non-managerial employees were included, although not in equal numbers. The non-probability nature of the sampling procedure is acknowledged as a limitation, and statistical generalization to the broader population of employees in Pakistani SMEs should therefore be made with caution. Sample size was determined a priori using G*Power. Based on the parameters of the broader thesis project (four groups, one covariate, 10 numerator degrees of freedom), a total sample of approximately 400 was required to achieve statistical power of .95 (Faul et al., 2009). This target was selected to ensure stable estimation of the regression paths required for the mediation and moderation analyses reported in the broader project and to support reliable estimation of the regression paths reported in the present study. The demographic characteristics of the 400 participants are summarized in Table 1 in Section 4.1.

Research Design

This study employed a quantitative, cross-sectional survey design to examine the impact of transformational leadership on innovative work behavior. An explanatory research approach was adopted, and the proposed hypotheses were tested using simple and multiple regression analyses. The analysis was conducted in two stages. First, simple linear regression was performed to examine the effect of overall transformational leadership on innovative work behavior. Second, the four dimensions of transformational leadership—idealized influence, inspirational motivation, individualized consideration, and intellectual stimulation—were entered simultaneously into a multiple regression model to estimate their unique effects on innovative work behavior while controlling for the shared variance among the dimensions. Although the study examined the hypothesized impact of transformational leadership on innovative work behavior, the findings are based on a cross-sectional survey design. Therefore, the regression results provide evidence supporting the proposed hypotheses and the predictive effects of transformational leadership on innovative work behavior; however, they should not be interpreted as conclusive evidence of causality.

Measurement

Transformational leadership was assessed using an adapted 16-item version of the Multifactor Leadership Questionnaire (MLQ) developed by Bass and Avolio (1995, 1997). The scale measured four dimensions of transformational leadership—idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration—with four items representing each dimension. Responses were recorded on a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Innovative work behavior was represented by 10 items, consistent with the innovative work behavior tradition that distinguishes the generation, promotion, and implementation of work-related ideas (De Jong & Den Hartog, 2010). The construct interpretation follows the established four-component transformational leadership tradition (Avolio et al., 1999; Bass & Riggio, 2006).

Data Analysis

The data analysis proceeded through a series of sequential analytical procedures. First, descriptive statistics were used to summarize the central tendency, dispersion, skewness, and kurtosis of the study variables. Second, Cronbach's alpha was used to assess the internal consistency of the measurement scales. Third, the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were employed to assess the suitability of the data for factor analysis. Fourth, common method bias was assessed using Harman's

single-factor test and the full-collinearity approach. Fifth, Pearson correlation analysis was performed to examine the zero-order relationships among overall transformational leadership, its four dimensions, and innovative work behavior. Sixth, tolerance and variance inflation factor (VIF) statistics were examined to assess multicollinearity among the four transformational leadership dimensions. Finally, regression analysis was conducted to examine the relationship between overall transformational leadership and innovative work behavior and to assess the simultaneous effects of the four transformational leadership dimensions on innovative work behavior. Statistical significance was evaluated at $p < .05$. Supplementary pairwise comparisons of the standardized regression coefficients were also conducted to assess whether the observed differences between the dimension-level coefficients were statistically significant.

Common Method Bias Assessment

Common method bias (CMB) was assessed using two complementary statistical diagnostics. First, Harman's single-factor test was conducted to examine whether a single factor accounted for a substantial proportion of the variance among the measurement items. All 26 measurement items were entered into an unrotated principal component analysis, with a first-factor variance below 50% used as the conventional diagnostic criterion. Nevertheless, because Harman's single-factor test is a relatively limited diagnostic, it was not treated as definitive evidence regarding common method variance (Podsakoff et al., 2003). To complement Harman's single-factor test, CMB was further assessed using the full-collinearity approach proposed by Kock (2015), with VIF values exceeding 3.3 indicating potential common method bias

Ethical and Publication Transparency

Data collection followed standard ethical procedures for survey-based organizational research. Participation was voluntary, the academic purpose of the study was explained to respondents, confidentiality was assured, participants were free to decline or discontinue at any point, and informed consent was obtained through completion of the questionnaire. Results are reported in aggregate form and no direct participant identifiers were retained; preparation of the present article involved no new participant contact. The author's broader doctoral project materials do not provide a separately numbered institutional ethics approval or exemption reference, so no approval number is asserted in this manuscript. This manuscript is a separate, standalone article from the author's earlier publication (Khan et al., 2026); although both draw on data collected as part of the same broader thesis project, they analyze different complete-case subsets and test substantively different models. Khan et al. (2026) examined the aggregate transformational leadership-innovative work behavior relationship together with the mediating role of psychological empowerment and the moderating role of proactive personality. The present study decomposes transformational leadership into its four constituent dimensions and compares their unique standardized contributions to innovative work behavior using a sample of 400 employees, without incorporating mediating or moderating variables.

Results and Analysis

Demographic Characteristics of Participants

Table 1 summarizes the demographic composition of the 400 participants. The sample was predominantly male (61.3%) and concentrated in the 31-40 age range (60.0% combined), consistent with the working-age composition typical of SME employment in this context. Most respondents held a master's-level qualification (MA/M.Sc or MS/M.Phil, 69.3% combined), and a majority had between one and five years of organizational tenure (59.3%),

indicating a relatively early-to-mid-career workforce. The four sampled regions (Kohat, Lahore, Multan, and Faisalabad) were represented in roughly comparable proportions (23.8%-26.2%), supporting the intended geographic balance of the sampling design.

Table 1. Demographic characteristics of participants (N = 400)

Variable	Category	Frequency	(%)
Gender	Male	245	61.3
	Female	155	38.7
Age	25-30 years	65	16.3
	31-35 years	140	35.0
	36-40 years	100	25.0
	41-45 years	55	13.8
	46+ years	40	10.0
Education	BA/B.Sc	100	25.0
	MA/M.Sc	164	41.0
	MS/M.Phil	113	28.3
	Above MS/M.Phil	23	5.8
Experience	<1 year	58	14.5
	1-5 years	237	59.3
	6-11 years	80	20.0
	12-17 years	16	4.0
	≥18 years	9	2.2
Region	Kohat	95	23.8
	Lahore	105	26.2
	Multan	98	24.5
	Faisalabad	102	25.5

N = 400 for the total sample. Percentages are calculated within each demographic variable and may not sum to exactly 100% due to rounding.

Descriptive Statistics and Distributional Pattern

All 400 cases were completed for the six reported construct scores. The means indicate generally favorable perceptions of transformational leadership and innovative work behavior. Inspirational motivation had the highest mean ($M = 3.7714$), followed by idealized influence ($M = 3.7509$), overall transformational leadership ($M = 3.7252$), individualized consideration ($M = 3.6982$), intellectual stimulation ($M = 3.6804$), and innovative work behavior ($M = 3.6411$). Standard deviations ranged from .46532 to .62289. Skewness values ranged from -.137 to .125 and kurtosis from -.553 to .101, indicating no pronounced univariate asymmetry or tail behavior in the reported construct distributions.

Table 2. Descriptive statistics

Construct	Mean (SD)	Skewness	Kurtosis
Overall transformational leadership	3.7252 (.46532)	.125	-.040
Idealized influence	3.7509 (.62271)	-.088	-.461
Inspirational motivation	3.7714 (.60054)	.097	-.553
Individualized consideration	3.6982 (.62289)	-.137	.101
Intellectual stimulation	3.6804 (.61315)	-.047	-.076
Innovative work behavior	3.6411 (.56180)	-.091	-.061

N = 400 for every construct; no missing cases were reported.

Reliability and Factorability

Internal consistency was satisfactory across all measures. Cronbach's alpha ranged from .796 for intellectual stimulation to .893 for innovative work behavior. Overall transformational leadership had an alpha of .882. These values indicate that the items within each reported scale covary sufficiently for composite-score analysis. The Kaiser-Meyer-Olkin statistic was .945, indicating very strong sampling adequacy, while Bartlett's test of sphericity was significant, $\chi^2(325) = 3076.881$, $p < .001$. Taken together, the diagnostics support the presence of substantial inter-item correlations suitable for factor-oriented analysis.

Table 3. Internal consistency reliability

Construct	Items	Cronbach's alpha
Idealized influence	4	.824
Inspirational motivation	4	.799
Individualized consideration	4	.803
Intellectual stimulation	4	.796
Overall transformational leadership	16	.882
Innovative work behavior	10	.893

Table 4. Factorability diagnostics

Diagnostic	Value	Interpretation
Kaiser-Meyer-Olkin measure	.945	High sampling adequacy
Bartlett's test of sphericity	$\chi^2(325) = 3076.881$, $p < .001$	Correlation matrix differs from an identity matrix

Common Method Bias Assessment

Harman's single-factor test extracted the 26 measurement items using an unrotated principal-component solution. The first factor accounted for 36.94% of total variance, which is below the 50% heuristic applied in this study. This pattern does not indicate a single dominant factor. Nevertheless, because the test is only a coarse diagnostic, the result should be interpreted as one piece of evidence rather than as definitive proof that common method variance is absent. In addition to Harman's single-factor test, common method bias (CMB) was assessed using the full collinearity approach proposed by Kock (2015). The full collinearity VIF values ranged from 1.464 to 2.402, all below the recommended threshold of 3.3. Therefore, the results indicate the absence of problematic full collinearity and suggest that common method bias is unlikely to have affected the study findings.

Table 5. Common method bias diagnostics: Harman's single-factor test and full-Collinearity test

Diagnostic	Value
Harman single-factor test - measurement items	26
Extraction method	Principal component analysis
Variance explained by first unrotated factor	36.940%
Harman heuristic threshold applied	< 50%
Full collinearity VIF - Idealized Influence (II)	1.541
Full collinearity VIF - Inspirational Motivation (IM)	1.790
Full collinearity VIF - Individualized Consideration (IC)	1.464
Full collinearity VIF - Intellectual Stimulation (IS)	1.583
Full collinearity VIF - Innovative Work Behavior (IWB)	2.402
Full collinearity VIF threshold (Kock, 2015)	< 3.3
Interpretation	No dominant single factor under Harman's test; full collinearity VIF values below threshold, indicating common method bias is unlikely to have affected the study findings

Correlation Analysis

The correlation matrix shows positive relationships among all transformational leadership variables and innovative work behavior. Overall transformational leadership correlated strongly with innovative work behavior ($r = .759$, $p < .01$). At the dimension level, inspirational motivation had the strongest zero-order correlation with innovative work behavior ($r = .639$), followed by intellectual stimulation ($r = .570$), idealized influence ($r = .548$), and individualized consideration ($r = .542$). The four dimension scores were moderately intercorrelated with one another, with correlations ranging from .387 to .471. Their correlations with the overall transformational leadership score were considerably higher (.729-.772), which is expected because the dimensions are components of the aggregate construct.

Table 6. Pearson correlation matrix

	1	2	3	4	5	6
1	1	.765**	.772**	.729**	.762**	.759**
2	.765**	1	.464**	.395**	.451**	.548**
3	.772**	.464**	1	.417**	.471**	.639**
4	.729**	.395**	.417**	1	.387**	.542**
5	.762**	.451**	.471**	.387**	1	.570**
6	.759**	.548**	.639**	.542**	.570**	1

*Overall transformational leadership; 2 = Idealized influence; 3 = Inspirational motivation; 4 = Individualized consideration; 5 = Intellectual stimulation; 6 = Innovative work behavior. N = 400. ** $p < .01$ (two-tailed).*

Multicollinearity

Dimension-level regression can be distorted when predictors are excessively collinear. In the present analysis, tolerance values range from .663 to .753 and variance inflation factor values range from 1.328 to 1.508. These values are comfortably within conventional diagnostic limits and indicate that the four dimensions retain sufficient unique variance for simultaneous regression. The coefficients can therefore be interpreted as dimension-specific statistical contributions rather than as artifacts of severe multicollinearity.

Table 7. Multicollinearity diagnostics for transformational leadership dimensions

Predictor	Tolerance	Variance inflation factor
Idealized influence	.753	1.328
Inspirational motivation	.663	1.508
Individualized consideration	.703	1.423
Intellectual stimulation	.679	1.473

Hypothesis Testing

Hypothesis 1 predicted a positive association between overall transformational leadership and innovative work behavior. The reported model explained 57.6% of the variance in innovative work behavior ($R^2 = .576$). The standardized coefficient for overall transformational leadership was positive and statistically significant ($\beta = .759$, $t = 19.433$, $p < .001$), supporting Hypothesis 1. The magnitude is consistent with the strong zero-order correlation and with the broader literature showing a robust positive transformational leadership-innovative work behavior relationship (Afsar et al., 2014; Afsar & Umrani, 2020; Sanlioz & Yildiz, 2026). Hypothesis 2 predicted a positive relationship between idealized influence and innovative work behavior. The dimension-level regression coefficient was positive and significant ($\beta = .192$, $t = 4.097$, $p < .001$), supporting Hypothesis 2. This result is consistent with the argument that credible role modeling and values-based leadership can make discretionary change-oriented behavior safer and more legitimate for followers. Hypothesis 3 predicted a positive relationship between inspirational motivation and innovative work behavior. Inspirational motivation produced a positive and significant coefficient ($\beta = .344$, $t = 7.206$, $p < .001$), supporting Hypothesis 3. Importantly, .344 was the largest standardized coefficient among the four dimensions. This pattern suggests that, within the fitted model, the variance uniquely associated with articulating an inspiring and meaningful direction was particularly consequential for innovative work behavior. Hypothesis 4 predicted a positive relationship between individualized consideration and innovative work behavior. The coefficient was positive and significant ($\beta = .234$, $t = 5.199$, $p < .001$), supporting Hypothesis 4. Individualized consideration therefore contributes unique explanatory value beyond the variance shared with the other dimensions. Developmental attention, feedback, and support may help employees persist through the ambiguity and learning demands inherent in innovation. Hypothesis 5 predicted a positive relationship between intellectual stimulation and innovative work behavior. Intellectual stimulation was also positive and significant ($\beta = .231$, $t = 4.922$, $p < .001$), supporting Hypothesis 5. The finding accords with the conceptual proximity between intellectual stimulation and innovative problem solving: leaders who encourage employees to question assumptions and explore alternatives create cognitive conditions conducive to idea generation and adaptation.

Table 8. Hypothesis testing

Hypothesis	Relationship	β (t)	p / decision
H1	Overall transformational leadership → Innovative work behavior	.759 (19.433)	< .001 / Supported
H2	Idealized influence → Innovative work behavior	.192 (4.097)	< .001 / Supported
H3	Inspirational motivation → Innovative work behavior	.344 (7.206)	< .001 / Supported
H4	Individualized consideration → Innovative work behavior	.234 (5.199)	< .001 / Supported
H5	Intellectual stimulation → Innovative work behavior	.231 (4.922)	< .001 / Supported

Model Fit and Comparison of Standardized Regression Coefficients

The four standardized coefficients reported in the primary regression model were estimated directly from the dataset. The simultaneous four-dimension regression yields a dimension-level R^2 of 0.583, adjusted R^2 of 0.577, and an omnibus $F(4, 275) = 96.17$, $p < .001$. Thus, the four dimensions jointly account for approximately 58.3% of the variance in innovative work behavior, slightly more than the 57.6% explained by the aggregate transformational leadership score. The similarity of these values is substantively informative: the global score captures most of the predictive signal, while decomposition reveals how that signal is distributed among distinct leadership behaviors. Because standardized coefficients share a common outcome and are estimated from correlated predictors, their numerical ranking should not automatically be interpreted as proof that one coefficient is statistically larger than another. To evaluate the observed ordering more rigorously, supplementary pairwise tests of the standardized coefficient differences were computed directly from the author's own data and the fitted regression model, $N = 400$. These tests are supplementary calculations that accompany the primary regression results reported above. Inspirational motivation was significantly larger than idealized influence (difference in $\beta = .152$, $t = 2.01$, $p = .045$). However, inspirational motivation did not differ significantly from individualized consideration ($p = .129$) or intellectual stimulation ($p = .139$), and the remaining pairwise differences were nonsignificant. The correct conclusion is therefore that inspirational motivation has the largest observed unique coefficient and is statistically larger than idealized influence in this analysis, but it cannot be claimed to dominate all other dimensions.

Table 9. Supplementary Regression Model Fit and Coefficient Comparison

Statistic	Result
Dimension model R^2	.583
Adjusted R^2	.577
Omnibus model	$F(4, 275) = 96.17$; $p < .001$
IM vs II	$\Delta\beta = .152$; $t = 2.01$; $p = .045$
IM vs IC	$\Delta\beta = .110$; $t = 1.52$; $p = .129$
IM vs IS	$\Delta\beta = .112$; $t = 1.48$; $p = .139$

Statistics are computed directly from the author's own data ($N = 400$) and the fitted dimension-level regression model; they are included to qualify the interpretation of relative coefficient size. IM = inspirational motivation; II = idealized influence; IC = individualized consideration; IS = intellectual stimulation.

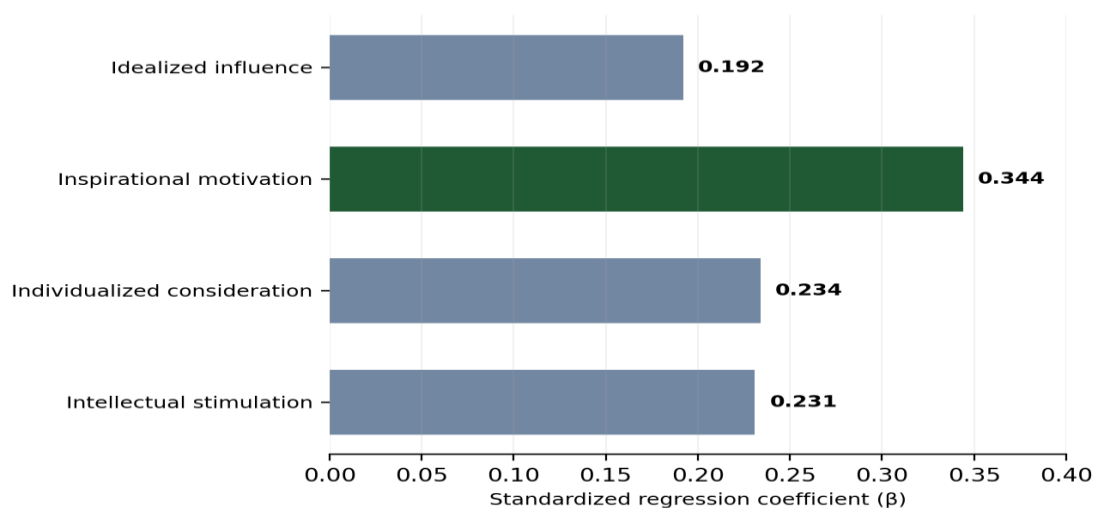


Figure 2. Standardized coefficients for the four transformational leadership dimensions
Coefficients are from the simultaneous dimension-level regression reported in the primary regression model.

DISCUSSION

Comparative Interpretation of the Four Dimensions

The central analytical contribution lies in comparing the dimension-level pattern. The standardized coefficients were inspirational motivation (.344), individualized consideration (.234), intellectual stimulation (.231), and idealized influence (.192). Thus, inspirational motivation generated the largest unique standardized coefficient in the model. Individualized consideration and intellectual stimulation were nearly equal, while idealized influence remained significant but smaller. This pattern adds behavioral specificity to the aggregate finding that transformational leadership is strongly associated with innovative work behavior. The result is theoretically plausible. Innovative work behavior requires employees not only to think differently but also to devote sustained effort to uncertain outcomes. Intellectual stimulation provides cognitive challenge, but inspirational motivation can answer a different question: why should the employee persist with the change? A compelling vision can make innovation meaningful, align personal effort with collective purpose, and sustain energy when implementation becomes difficult. Vu et al. (2025) similarly emphasize the motivational role of clear and inspiring leadership in making work meaningful, while transformational leadership research more broadly treats vision communication as central to follower motivation (Bass & Riggio, 2006). The present data are consistent with that interpretation, although the analysis cannot directly test the psychological mechanism. Individualized consideration and intellectual stimulation produced almost identical standardized coefficients. Their similarity suggests complementary pathways. Intellectual stimulation targets how employees think about problems; individualized consideration targets the support employees receive while developing and applying solutions. Innovation can fail if either pathway is absent. Employees may have novel ideas but insufficient coaching or confidence to champion them, or they may feel supported but not challenged to rethink routine assumptions. The comparable coefficients therefore support a balanced leadership approach rather than a one-dimensional prescription. Idealized influence had the smallest of the four significant standardized coefficients. This does not mean that role modeling is unimportant. First, the coefficient represents unique variance after controlling for the other dimensions. Second, idealized influence may operate partly through shared variance with inspirational motivation and other transformational behaviors. Third, role modeling may shape trust and identification, which could influence innovative behavior indirectly rather

than appearing as the largest direct coefficient. Sanliož and Yildiz's (2026) meta-analysis highlights trust in the leader and leader-member exchange as important relational pathways linking transformational leadership with innovative workplace behavior, supporting this more nuanced interpretation. The zero-order correlations also illustrate why simultaneous modeling is important. Intellectual stimulation had the second-highest bivariate correlation with innovative work behavior ($r = .570$), yet its standardized regression coefficient (.231) was slightly below individualized consideration (.234). Correlations describe total pairwise association, whereas regression coefficients isolate unique contribution after shared variance among predictors is accounted for. The shift in ordering is therefore not contradictory; it is evidence that the dimensions overlap and that unique predictive weight differs from simple association. Finally, the largest coefficient should not be overinterpreted. Although supplementary pairwise comparisons indicated that inspirational motivation was significantly larger than idealized influence, it did not differ significantly from individualized consideration or intellectual stimulation. Accordingly, the defensible conclusion is that inspirational motivation has the largest observed standardized coefficient, but the evidence does not establish its statistical superiority over all other transformational leadership dimensions.

Why Inspirational Motivation Emerges as the Largest Observed Coefficient

The prominence of inspirational motivation deserves careful interpretation. Innovative work behavior is effortful, uncertain, and partly discretionary. Employees may generate ideas but abandon them if the organization does not provide a meaningful reason to persist through resistance, coordination demands, and implementation setbacks. Inspirational motivation can supply that reason by translating innovation from a technical demand into a shared future-oriented purpose. This interpretation is consistent with transformational leadership theory, which positions vision and confidence as mechanisms for mobilizing effort beyond ordinary expectations (Bass & Riggio, 2006), and with recent evidence that transformational leadership supports innovative behavior through motivational processes such as psychological empowerment and meaningfulness (Stanescu et al., 2021; Vu et al., 2025).

At the same time, the supplementary coefficient-comparison analysis prevents an exaggerated conclusion. Inspirational motivation was statistically larger than idealized influence, but its coefficient was not significantly different from individualized consideration or intellectual stimulation. This means that the observed ranking should guide theory development rather than be treated as a definitive hierarchy. The broader implication is complementarity: vision energizes innovative effort, intellectual stimulation opens cognitive alternatives, individualized consideration sustains learning and confidence, and idealized influence provides credible role modeling. A transformational leader who inspires without enabling challenge or development may create enthusiasm without implementation; a leader who stimulates ideas without a coherent purpose may create novelty without sustained commitment.

Positioning the Findings Against the Existing Literature

The findings align with the robust positive aggregate transformational leadership-innovation relationship documented in primary studies and recent synthesis (Afsar et al., 2014; Knezović & Drkić, 2021; Saif et al., 2024; Sanliož & Yildiz, 2026). They also speak to studies reporting contingencies or mixed direct effects. Bednall et al. (2018), for example, emphasized that the amount and form of transformational leadership can matter for innovative behavior, while Pieterse et al. (2010) showed that empowerment conditions the innovation consequences of leadership. The present dimension-level evidence suggests one reason aggregate findings can vary: different samples may experience different mixtures of transformational behaviors, and those behaviors need not carry identical unique coefficients.

The paper also extends component-focused work. Sethibe and Steyn (2017) explicitly examined leadership styles and their components in relation to innovative behavior, while Deinert et al. (2015) showed through meta-analysis that transformational sub-dimensions have differentiated nomological patterns. The present study contributes a compact four-dimension comparison tied directly to innovative work behavior and demonstrates that a global transformational leadership effect can coexist with meaningful differences in the unique predictive contribution of its components. This provides a bridge between global leadership models and behaviorally specific leadership-development recommendations.

THEORETICAL CONTRIBUTIONS

The study offers three theoretical implications. First, it reinforces the value of treating transformational leadership as a multidimensional construct when the research purpose is behavioral specificity. Aggregate scores are useful for estimating a general leadership effect, and the present analysis confirms a strong overall relationship with innovative work behavior. However, the dimension-level coefficients demonstrate that the same aggregate relationship can contain unequal unique contributions. This aligns with scholarship showing that transformational leadership sub-dimensions are empirically distinguishable and can relate differently to outcomes (Deinert et al., 2015).

Second, the findings refine the leadership-innovation link by suggesting that motivational meaning may be as important as cognitive challenge. Intellectual stimulation is often intuitively viewed as the transformational dimension closest to innovation because it directly encourages new thinking. Yet inspirational motivation produced the largest standardized coefficient in the present model. This pattern is consistent with a social-cognitive view in which behavior reflects both cognitive framing and motivation (Bandura, 1986). Employees may need not only permission to question routines but also a compelling reason to invest in the demanding process of championing and implementing ideas.

Third, the study complements mechanism-focused research without duplicating it. Existing studies have explained the aggregate transformational leadership-innovative work behavior relationship through psychological empowerment, knowledge sharing, meaningful work, innovation climate, and related processes (Afsar et al., 2019; Korku & Kaya, 2023; Pradhan & Jena, 2019; Stanescu et al., 2021; Vu et al., 2025). The present paper shifts the analytical lens from mechanisms to components. Future theory can combine these perspectives by testing whether different transformational dimensions operate through different mediators—for example, whether inspirational motivation acts primarily through meaning and goal commitment while intellectual stimulation acts through creative self-efficacy or knowledge exploration.

A Component-Level Framework for Leadership and Innovation

A component-level interpretation helps reconcile two features of the literature that can otherwise appear inconsistent. On one hand, meta-analytic and primary evidence supports a positive overall relationship between transformational leadership and innovative workplace behavior (Afsar et al., 2014; Sanlioz & Yildiz, 2026). On the other hand, studies of leadership components and boundary conditions show that transformational behaviors are not interchangeable and need not be equally consequential in every setting (Bednall et al., 2018; Deinert et al., 2015; Sethibe & Steyn, 2017). The present results fit both observations. The aggregate construct explains a large share of variance, while decomposition reveals a differentiated pattern of unique coefficients.

This distinction has theoretical value because it separates construct-level efficacy from behavioral composition. A global transformational leadership score answers whether a broad leadership pattern is associated with innovative work behavior. A component model answers a different question: which observed behaviors account for unique variance once their overlap

is controlled? The answer in this dataset is not a single dominant behavior but a ranked and partly overlapping profile. Inspirational motivation is numerically largest; individualized consideration and intellectual stimulation are close to one another; and idealized influence remains independently positive. That pattern is compatible with the view that innovation requires motivational, cognitive, developmental, and relational resources rather than one isolated leadership act (Bass & Riggio, 2006; Hughes et al., 2018).

The framework also clarifies how future mediation research can become more precise. Rather than placing one mediator between an aggregate leadership score and innovative work behavior, future studies can link specific dimensions to mechanisms for which they have the clearest theoretical affinity. Inspirational motivation can be connected to meaningful work and intrinsic motivation; intellectual stimulation to creative cognition and experimentation; individualized consideration to psychological empowerment and developmental support; and idealized influence to trust and identification. Existing studies already demonstrate the relevance of meaningful work, psychological empowerment, innovation climate, and knowledge sharing to the transformational leadership-innovation relationship (Afsar et al., 2019; Korku & Kaya, 2023; Pradhan & Jena, 2019; Stanescu et al., 2021). A dimension-specific mechanism model would therefore extend, rather than duplicate, this established literature.

PRACTICAL AND MANAGERIAL IMPLICATIONS

For managers, the results argue against treating transformational leadership as a vague instruction to be more charismatic. The four dimensions can be translated into observable practices. Idealized influence means demonstrating consistency between stated innovation values and managerial decisions; inspirational motivation means communicating why innovation matters and what a successful future could look like; individualized consideration means coaching employees according to their skills and developmental needs; and intellectual stimulation means deliberately inviting alternative explanations, experiments, and constructive challenge.

The largest standardized coefficient for inspirational motivation suggests that managers should pay particular attention to the quality of innovation-related vision communication. Employees are more likely to sustain discretionary innovation efforts when leaders connect improvement initiatives with meaningful organizational goals, express confidence that change is achievable, and make the future state concrete enough for employees to see their role in it. Vision, however, should not replace substantive support. The significant coefficients for individualized consideration and intellectual stimulation indicate that inspiration should be paired with developmental coaching and real permission to question established routines.

A practical leadership-development program could therefore be structured around four behavioral routines: model the innovation standards expected from others; explain a compelling innovation purpose; coach employees individually as they develop ideas; and run structured problem-reframing discussions that challenge assumptions. Organizations can also incorporate these behaviors into supervisor feedback and development systems. The present results do not justify eliminating any dimension; all four were positive and significant. The more defensible managerial conclusion is to maintain a balanced transformational profile while ensuring that inspirational communication is not neglected.

Managerial Priority Framework

The coefficient pattern can be translated into a practical sequence for leadership development. First, managers should make innovation meaningful by communicating a credible picture of why change matters, how proposed improvements connect with organizational purpose, and what success would look like. This gives concrete behavioral

content to inspirational motivation rather than treating it as charisma. Second, leaders should create intellectual space for employees to question routines, compare alternatives, and run bounded experiments. Third, managers should provide individualized coaching so that employees can develop the competence and confidence needed to champion and implement ideas. Fourth, leaders should model consistency between stated innovation values and their own decisions, particularly when experiments fail or when employees raise inconvenient problems.

The results do not justify allocating attention exclusively to the largest coefficient. All four dimensions were statistically significant, and supplementary coefficient comparisons did not establish that inspirational motivation was larger than individualized consideration or intellectual stimulation. A balanced development strategy is therefore more defensible than a winner-take-all interpretation. This is consistent with evidence that transformational leadership supports innovative behavior through multiple routes, including empowerment, knowledge sharing, and motivational processes (Choi et al., 2016; Saif et al., 2024; Vu et al., 2025). For practice, the key message is prioritization without substitution: strengthen the clarity and motivational force of innovation-oriented communication while preserving coaching, cognitive challenge, and credible role modeling.

Organizations can operationalize this framework in supervisor development and performance conversations. Leadership assessments can ask for behavioral evidence rather than abstract self-ratings: examples of how a manager explained an innovation goal, invited a challenge to an established practice, coached an employee through an uncertain idea, or demonstrated consistency between innovation rhetoric and resource allocation. Such evidence-based prompts make the four dimensions observable and coachable. They also reduce the risk that transformational leadership becomes a generic label detached from concrete managerial behavior.

LIMITATIONS AND FUTURE RESEARCH

Several limitations bound interpretation. First, the sample was drawn through multistage non-probability sampling from SMEs in four Pakistani cities, and the dimension-level analysis relies on a 400-case complete-case subset of the 400 employees who provided data. Non-probability sampling and complete-case analysis both limit generalization: findings should not be extended to sectors, regions, or organizational contexts beyond those sampled, and the complete-case subsample may differ systematically from the full 400-employee sample if data were not missing at random. Replication studies should document design characteristics prospectively, employ probability-based sampling where feasible, and test the dimension-level pattern across sectors, regions, and national contexts.

Second, the analysis is observational. A positive regression coefficient does not by itself establish a causal effect of leadership on innovative work behavior. Reverse influence, omitted variables, or stable response tendencies could contribute to the associations. Longitudinal, multisource, experimental, or quasi-experimental designs would strengthen causal inference. Future studies could combine employee ratings of leadership with supervisor ratings of innovative work behavior or objective innovation indicators.

Third, although this study applied two complementary statistical diagnostics for common method bias (Harman's single-factor test and the full collinearity test), both remain post hoc statistical checks rather than design-level remedies. All constructs—overall transformational leadership, its four dimensions, and innovative work behavior—were measured through self-report questionnaire items completed by the same employees at a single point in time. This single-source, single-time design means that the reassuring statistical diagnostics cannot fully rule out inflation of the reported associations by shared method variance, common rater effects, or consistency motifs in how individual respondents answered items across constructs. Future replications of this dimension-level model should build procedural

safeguards into the research design itself—for example, obtaining innovative work behavior ratings from supervisors rather than employees, separating the measurement of transformational leadership and innovative work behavior in time, or incorporating a marker variable—rather than relying on statistical diagnostics applied after data collection.

Fourth, although supplementary pairwise comparisons were conducted, the assessment of the relative importance of the four transformational leadership dimensions remains subject to analytical limitations. Confidence intervals for the standardized coefficients were not estimated, and the correlated nature of the predictors makes comparisons based solely on coefficient magnitude less definitive. Future research should employ bootstrap confidence intervals and more comprehensive relative-importance techniques, such as dominance analysis or relative-weight analysis, to provide stronger evidence regarding the comparative importance of the transformational leadership dimensions.

Fifth, the present model focuses on direct dimension-level relationships. A next step is to integrate component and mechanism perspectives. For example, future research could test whether inspirational motivation predicts innovative work behavior through meaningful work or intrinsic motivation, whether intellectual stimulation acts through creative self-efficacy, whether individualized consideration operates through psychological empowerment, and whether idealized influence works through trust. Such models would clarify not only which transformational behavior matters but also why it matters.

Robustness and Replication Agenda

A rigorous replication should preserve the present component-level logic while improving design transparency. The sampling frame, sector composition, geographic coverage, response rate, data-collection period, and exact source of each measurement scale should be documented prospectively. The four leadership dimensions should be confirmed through an explicit measurement model before structural comparisons are interpreted. Where the constructs are measured from the same respondent, procedural remedies for common method variance should be designed before data collection rather than relying only on a post hoc single-factor diagnostic (Podsakoff et al., 2003).

Future analyses should report confidence intervals for standardized coefficients and extend the present pairwise comparisons through more comprehensive tests of coefficient differences. The supplementary coefficient comparison in this paper demonstrates that a numerical ranking is not equivalent to statistical separation: inspirational motivation was larger than idealized influence in the pairwise test, but it was not statistically distinguishable from individualized consideration or intellectual stimulation. Replication with raw data would allow bootstrap confidence intervals, relative-weight analysis, dominance analysis, or structural equation models that explicitly account for measurement error. These approaches would provide stronger evidence about the relative importance of correlated leadership dimensions.

Finally, multisource and longitudinal designs would improve the substantive interpretation of the model. Transformational leadership could be rated by employees at one wave, mediating mechanisms measured later, and innovative work behavior assessed by supervisors or objective innovation indicators at a subsequent wave. Such designs would better distinguish leadership perception from innovation self-report and would test whether the component pattern is stable over time. Cross-cultural replication is also important because the effectiveness of transformational leadership can vary across cultural contexts, even when the broad construct remains meaningful (Sanlioz & Yildiz, 2026).

CONCLUSION

This study unpacked transformational leadership into idealized influence, inspirational motivation, individualized consideration, and intellectual stimulation and examined their

relationships with innovative work behavior using data from 400 employees of Pakistani SMEs, with the dimension-level analysis based on a 400-case complete-case subsample. Overall transformational leadership was strongly associated with innovative work behavior and explained 57.6% of the variance in the reported overall regression model. All four dimensions retained positive, statistically significant standardized coefficients when examined at the dimension level.

The most distinctive result is the comparative pattern. Inspirational motivation produced the largest standardized coefficient ($\beta = .344$), followed by individualized consideration ($\beta = .234$), intellectual stimulation ($\beta = .231$), and idealized influence ($\beta = .192$). This pattern indicates that transformational leadership is not behaviorally homogeneous in its unique statistical relationship with innovation. The findings therefore add precision to the broad conclusion that transformational leadership supports innovative work behavior: what leaders communicate about purpose and future direction appears especially salient in the fitted model, while developmental support, intellectual challenge, and role modeling remain independently relevant.

Overall, the study demonstrates the analytical value of unpacking transformational leadership when the goal is to understand employee innovation with behavioral precision. Aggregate transformational leadership remains a powerful predictor, but the component model reveals that the leadership signal is distributed unevenly across the four behaviors. The findings support a balanced transformational approach in which leaders model credible values, articulate an inspiring innovation purpose, coach employees according to their developmental needs, and deliberately challenge routine assumptions. By combining global and dimension-level evidence while avoiding causal overstatement, the study offers a more precise platform for leadership theory, managerial development, and future research on the mechanisms through which specific transformational behaviors translate into innovative work behavior.

REFERENCES

- Afsar, B., Badir, Y. F., & Saeed, B. B. (2014). Transformational leadership and innovative work behavior. *Industrial Management & Data Systems*, 114(8), 1270–1300. <https://doi.org/10.1108/IMDS-05-2014-0152>
- Afsar, B., Masood, M., & Umrani, W. A. (2019). The role of job crafting and knowledge sharing on the effect of transformational leadership on innovative work behavior. *Personnel Review*, 48(5), 1186–1208. <https://doi.org/10.1108/PR-04-2018-0133>
- Afsar, B., & Umrani, W. A. (2020). Transformational leadership and innovative work behavior: The role of motivation to learn, task complexity and innovation climate. *European Journal of Innovation Management*, 23(3), 402–428. <https://doi.org/10.1108/EJIM-12-2018-0257>
- AlEssa, H. S., & Durugbo, C. M. (2022). Systematic review of innovative work behavior concepts and contributions. *Management Review Quarterly*, 72(4), 1171–1208. <https://doi.org/10.1007/s11301-021-00224-x>
- Avolio, B. J., Bass, B. M., & Jung, D. I. (1999). Re-examining the components of transformational and transactional leadership using the Multifactor Leadership Questionnaire. *Journal of Occupational and Organizational Psychology*, 72(4), 441–462. <https://doi.org/10.1348/096317999166789>
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall.
- Bass, B. M., & Avolio, B. J. (1995). *MLQ Multifactor Leadership Questionnaire for research: Permission set*. Mind Garden.
- Bass, B. M., & Avolio, B. J. (1997). *Full range leadership development: Manual for the Multifactor Leadership Questionnaire*. Mind Garden.

- Bass, B. M., & Riggio, R. E. (2006). *Transformational leadership* (2nd ed.). Psychology Press. <https://doi.org/10.4324/9781410617095>
- Bednall, T. C., Rafferty, A. E., Shipton, H., Sanders, K., & Jackson, C. J. (2018). Innovative behaviour: How much transformational leadership do you need? *British Journal of Management*, 29(4), 796–816. <https://doi.org/10.1111/1467-8551.12275>
- Choi, S. B., Kim, K., Ullah, S. M. E., & Kang, S.-W. (2016). How transformational leadership facilitates innovative behavior of Korean workers: Examining mediating and moderating processes. *Personnel Review*, 45(3), 459–479. <https://doi.org/10.1108/PR-03-2014-0058>
- De Jong, J. P. J., & Den Hartog, D. N. (2010). Measuring innovative work behaviour. *Creativity and Innovation Management*, 19(1), 23–36. <https://doi.org/10.1111/j.1467-8691.2010.00547.x>
- Deinert, A., Homan, A. C., Boer, D., Voelpel, S. C., & Gutermann, D. (2015). Transformational leadership sub-dimensions and their link to leaders' personality and performance. *The Leadership Quarterly*, 26(6), 1095–1120. <https://doi.org/10.1016/j.leaqua.2015.08.001>
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, 41(4), 1149–1160. <https://doi.org/10.3758/BRM.41.4.1149>
- Hughes, D. J., Lee, A., Tian, A. W., Newman, A., & Legood, A. (2018). Leadership, creativity, and innovation: A critical review and practical recommendations. *The Leadership Quarterly*, 29(5), 549–569. <https://doi.org/10.1016/j.leaqua.2018.03.001>
- Janssen, O. (2000). Job demands, perceptions of effort–reward fairness and innovative work behaviour. *Journal of Occupational and Organizational Psychology*, 73(3), 287–302. <https://doi.org/10.1348/096317900167038>
- Khan, J., Khan, I., & Anwar, S. (2026). Impact of transformational leadership on innovative work behavior: Mediating role of psychological empowerment and moderating role of proactive personality. *Journal of Management Science Research Review*, 5(2), 619–640.
- Knezović, E., & Drkić, A. (2021). Innovative work behavior in SMEs: The role of transformational leadership. *Employee Relations*, 43(2), 398–415. <https://doi.org/10.1108/ER-03-2020-0124>
- Korku, C., & Kaya, S. (2023). Relationship between authentic leadership, transformational leadership and innovative work behavior: Mediating role of innovation climate. *International Journal of Occupational Safety and Ergonomics*, 29(3), 1128–1134. <https://doi.org/10.1080/10803548.2022.2112445>
- Nguyen, T. P. L., Nguyen, T. T., Duong, C. D., & Doan, X. H. (2022). The effects of transformational leadership on employee creativity in Vietnam telecommunications enterprises. *Management Decision*, 60(3), 837–857. <https://doi.org/10.1108/MD-07-2020-0882>
- Pieterse, A. N., van Knippenberg, D., Schippers, M., & Stam, D. (2010). Transformational and transactional leadership and innovative behavior: The moderating role of psychological empowerment. *Journal of Organizational Behavior*, 31(4), 609–623. <https://doi.org/10.1002/job.650>
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879–903. <https://doi.org/10.1037/0021-9010.88.5.879>
- Pradhan, S., & Jena, L. K. (2019). Does meaningful work explains the relationship between transformational leadership and innovative work behaviour? *Vikalpa*, 44(1), 30–40. <https://doi.org/10.1177/0256090919832434>

- Saif, N., Amelia, Goh, G. G. G., Rubin, A., Shaheen, I., & Murtaza, M. (2024). Influence of transformational leadership on innovative work behavior and task performance of individuals: The mediating role of knowledge sharing. *Heliyon*, 10(11), e32400. <https://doi.org/10.1016/j.heliyon.2024.e32400>
- Sanlioz, E., & Yildiz, B. (2026). How and when transformational leadership sparks innovative workplace behaviors: Cumulative evidence from a meta-analytic review. *Current Psychology*, 45, Article 999. <https://doi.org/10.1007/s12144-026-09567-8>
- Saunders, M., Lewis, P., & Thornhill, A. (2023). *Research methods for business students* (9th ed.). Pearson.
- Sethibe, T., & Steyn, R. (2017). The impact of leadership styles and the components of leadership styles on innovative behaviour. *International Journal of Innovation Management*, 21(2), 1750015. <https://doi.org/10.1142/S1363919617500153>
- Shafi, M., Zoya, Lei, Z., Song, X., & Sarker, M. N. I. (2020). The effects of transformational leadership on employee creativity: Moderating role of intrinsic motivation. *Asia Pacific Management Review*, 25(3), 166–176. <https://doi.org/10.1016/j.apmr.2019.12.002>
- Stanescu, D. F., Zbucnea, A., & Pinzaru, F. (2021). Transformational leadership and innovative work behaviour: The mediating role of psychological empowerment. *Kybernetes*, 50(5), 1041–1057. <https://doi.org/10.1108/K-07-2019-0491>
- Vu, G. T. H., Nguyen, T. D., & Le, T. P. (2025). Transformational leadership and innovative work behaviors: The mediating effects of psychological empowerment and work engagement. *SAGE Open*, 15(2), 21582440251335464. <https://doi.org/10.1177/21582440251335464>