

THE ROLE OF LEADERSHIP IN FOSTERING ORGANISATIONAL INNOVATION: A CRITICAL, EVIDENCE-BASED REVIEW OF PUBLISHED QUANTITATIVE RESEARCH

Dr.M.Venkatesan

Assistant professor, PG Department of Commerce, Mar Gregorios college of arts and science.
Mogappair west, Chennai - 37.

Abstract

While leadership has long been known to be a key determinant of organizational performance, the role of leadership in organizational innovation is a dynamic and evolving field of study. In today's digitalized, competitive and customer-focused world, innovativeness is a must, not a choice, for organizations. This study aims to critically analyze the quantitative evidence about the relationship between leadership and organizational innovation. This review comes from a literature that was synthesized using empirical evidence from the Full Range Leadership Model and the Social Exchange Theory and the Componential Theory of Creativity to explore the leadership style–innovation outcome link across a range of organizational contexts.

A systematic search was conducted in the most important academic databases (Scopus, Web of Science and Google Scholar) for peer-reviewed literature published between 2000 and 2025. Forty-seven quantitative studies were selected after a systematic screening and quality appraisal process for detailed analysis. The review focuses on the effect transformational, transactional and servant leadership have on various forms of Innovation including product, process and administrative Innovation. In addition, the mediating and moderating effects of organizational culture, employee empowerment, psychological safety, and knowledge sharing behaviors are also explored in the study.

The results are always consistent, confirming that transformational leadership has the strongest positive relationship with the organizational innovation, for which the main contribution is represented by the capacity to inspire creativity, to stimulate intellectual engagement and to create positive organizational climates. The impact of transactional and servant leadership styles on innovation seems to be more context specific. During the review, the key areas of research are generated which needs further study such as the study of longitudinal causality, cross cultural differences and the leadership style and organizational environment. The study contributes to the leadership and innovation literature by bringing together the fragmented empirical evidence and offering directions for future research and practice.

Keywords: Leadership, Organizational Innovation, Transformational Leadership, Servant Leadership, Organizational Culture, Employee Empowerment, Quantitative Review.

1. Introduction

In today's economies, the ability to create, adapt and apply novelty – whether in the form of new products, new processes or new administrative systems – is a key factor in achieving sustained organisational competitiveness (Tidd & Bessant, 2021). In today's markets, which are dynamic and knowledge based, organisations have to continuously innovate to be strategic, to perform better and to adjust to technological and environmental changes. But innovation is not a natural process, nor does it naturally occur. Rather, it lies in a social, structural and institutional context which can facilitate or impede the generation and use of new ideas. Among these influences, leadership has attracted a significant amount of theoretical and empirical interest as it affects strategic priorities, resource allocation, organisational norms, and conditions for the success or demise of an innovation (Mumford et al., 2002).

During the past 30 years, much quantitative work has been dedicated to the relationship between leadership and innovation. The overall pattern of the evidence given by the meta-analysis is consistent with the idea that leadership matters for organisational outcomes in the area of creativity, innovation and change. Judge and Piccolo (2004), for instance, in their meta-analysis, combined 626 correlations across 87 independent samples, and found a corrected validity coefficient of $\rho = .44$ for transformational leadership with a wide variety of organizational outcomes. The study was not only focused on innovation but also provided a benchmark for learning about the influence of transformational leadership on the environment of organisations. More directly, Lee et al. (2019), after averaging 266 primary studies, concluded that there is a moderate but consistent relationship between leadership-related factors and innovative performance (with $\rho = .35$ for employee creativity and $\rho = .25$ for innovation outcomes). Important, Judge and Piccolo (2004) also found a corrected validity of .39 for contingent reward, the main element of transactional leadership, suggesting that this leadership approach may be a suitable substitute for transformational leadership in some organisational contexts to support innovation.

A lot of progress has been made in the area of scholarship; however, there are some gaps in the current literature. Firstly, there is no clarity about the meaning of the words leadership and innovation. While product innovation, process innovation, administrative innovation and strategic innovation (Damanpour, 1991) are definitely different in theory, many studies have incorporated innovation as one construct. This classification obscures the fact that there may be significant variations in the way in which leadership influences different types of innovation. Second, the number of studies of boundary condition is still limited. There is growing recognition of the importance of contextual variables, with some empirical evidence suggesting that they may have an effect on leadership effects, but not all interactions are consistently represented in the literature. An important exception is the meta-analysis by Büschgens et al. (2013), which gave insights into the correlation between developmental organisational cultures and innovation, based on 43 studies and 6,341 organisations, resulting in a correlation $r = .47$. There is, however, a lack of study of the possible link between innovation-enabling culture and leadership styles. Third, servant leadership is a powerful employee-centred leadership style of this time and has already generated substantial conceptual and qualitative research. While Eva et al. (2019) conducted a review of 285 studies, there is still limited quantitative evidence that strongly supports the relationship between servant leadership and innovation outcomes.

The constraints imply that there is need for a more extensive analysis of the relationship between leadership and innovation. The available evidence is arranged in a fragmented manner in leadership theories, typologies of innovation, industries and national contexts, therefore it is hard to draw general conclusions regarding the effectiveness of different leadership styles. Also, methodological quality and measurement practices make it challenging to interpret the reported findings.

The aim of this paper, therefore, is to systematically review the quantitative empirical research on the role of leadership in organisations' innovation by addressing the issues. Specifically, the review aims are to: (i) map the three types of leadership (transformational, transactional and servant) onto a multidimensional framework of innovation; (ii) synthesize and contextualize the quantitative effect sizes reported in the meta-analyses and primary studies; (iii) consider and identify the variables that moderate and mediate the relationship between leadership and innovation, supported by empirical evidence; and (iv) evaluate the methodological strengths and weaknesses of the literature. This study is not a primary empirical study, but is not creating original data. Rather, it critically synthesises evidence based on peer-reviewed quantitative research to offer a more complete picture of the relationship between leadership and innovation in organisations, and to identify priorities for further research.

2. Conceptual Foundations and Theoretical Framework

2.1 Defining Organisational Innovation

Organisational innovation is viewed as the introduction of new ideas, processes, products or managerial practices, that create value and increase the effectiveness of the organisation. Although much work has been done on the concept of innovation, many scholars have found that there are multiple dimensions of innovation, each with its own set of antecedents, implementation requirements, and performance consequences. The understanding of the concept of innovation, therefore, must be understood comprehensively in order to be able to evaluate the impact of leadership on innovative outcomes.

Among the most important studies of innovation determinants was done by Damanpour (1991) who found three main types of organizational innovation, product innovation, process innovation and administrative innovation. Product innovation is the creation of new or substantially improved products and/or services, process innovation is the introduction of new or significantly improved production, delivery or operational methods and administrative innovation is the adoption of new or significantly improved organizational structures, management systems and governance practices. This multidimensional taxonomy is still very relevant as different types of innovations will need different leadership behaviours and organisational conditions. Skills required to stimulate exploratory product innovation, for example, may be quite different from those required for process efficiencies or administrative changes.

The concept of organisational innovation has also been developed to become more conceptually precise. The Organisational Innovativeness Questionnaire (OIQ) was developed by Wang and Ahmed (2004) from the concept of organisational innovations and the three types of innovations: product, process and administration and operationalised into psychometrically validated scales. The reported reliability coefficients ($\alpha = .83$ for product innovation, $\alpha = .79$ for process innovation, and $\alpha = .81$ for administrative innovation) suggest good internal consistency, and have helped to make the instrument widely used in organisational research. Another distinction is due to the difference between radical and incremental innovation (Ettlie et al., 1984). The difference between radical innovations and incremental innovations is quite large - radical innovation is a radical change in technology/ product/ organisational practices etc., and incremental innovation is continuous improvement and refinement. The separation has important implications for the theory of leadership. Transformational leadership, especially the intellectual stimulation aspect, is linked with radical innovation as it stimulates experimentation, creative problem solving and questioning of assumptions. In contrast, transactional leadership approaches like contingent reward and goal-setting could prove to be more effective for assisting with incremental innovation through the creation of performance expectations and implementation discipline. Innovation should therefore be considered as a multi-dimensional phenomenon and may react differently to different leadership styles.

2.2 The Full Range Leadership Model

The Full Range Leadership Model (Bass & Avolio, 1994, 1995) is the most extensively researched theory of leadership in organisations. The model views leadership as a continuum of leadership behaviors ranging from transformational, transactional, and laissez-faire leadership, giving a holistic view of the impact of leadership on follower attitudes, behaviors and outcomes.

Transformational leadership is the area of the FRLM that has been the most extensively studied, and is made up of four aspects: idealized influence, inspirational motivation, intellectual stimulation, and individualised consideration. These behaviours help transformational leaders to inspire people to embrace a shared vision, foster creativity, question assumptions, and develop employees. These attributes can be particularly critical when innovation and organisational change is required.

But transactional leadership is based on exchange relations between the leader and the follower. It is based on two main principles: contingent reward and management-by-exception. Transformational leadership is more about them being inspired to do something for their own benefit, while transactional leadership is more about setting out clear expectations and offering them a tangible incentive. Transactional leadership is a less creative approach, but it can be very useful in the execution, organization and oversight of creative ideas.

The standard measure is used in leadership research is the Multifactor Leadership Questionnaire (MLQ-5X; Bass & Avolio, 1995), the most widely used instrument to measure the FRLM. Validation studies show that the psychometric properties of the scales are good; reliability coefficients are over $\alpha = .90$ for the transformational leadership scales and acceptable for the transactional scales.

The most convincing quantitative evidence for the FRLM is the meta-analysis of 626 correlations in 87 independent samples by Judge and Piccolo (2004). They found that their corrected validity coefficient for transformational leadership was $\hat{\rho} = .44$ for organisational outcomes and $\hat{\rho} = .39$ for contingent reward. The findings run counter to the assumption that transformational leadership is always more effective and suggest that the transactional processes can serve as an effective tool in the effectiveness of organisations. Importantly, the authors found a high correlation ($r = .80$) between transformational leadership and contingent reward behaviour, which is an ongoing methodological challenge in the literature: the separation of the effects of different leadership dimensions. The implications of this issue for the interpretation of empirical findings are important, and it is worthwhile to reflect on the possibility of complementarities between leadership behaviours.

2.3 Servant Leadership Framework

Research interest in the FRLM has been ongoing for many years; however, a growing research interest and emphasis has been on servant leadership as a different lens through which to study the research of leader influence. The original concept of servant leadership, as presented by Greenleaf (1977), is centered on the development, wellbeing and empowerment of followers as the core of the leadership process.

Liden et al. (2008) operationalised the construct with the multidimensional Servant Leadership Scale (SL-28) which showed good reliability on seven dimensions. The focus of transformational leadership is on others taking the leader's vision for the organisation, whereas servant leadership is focused on developing and growing others. Indirectly, innovation will be expected to arise because of improved psychological safety, trust, cooperation, and empowering employees.

In recent years, there has been a significant amount of evidence that has grown about servant leadership and innovation. Eva et al. (2019) conducted a systematic review of 285 studies, which revealed a consistent positive relationship between servant leadership and job satisfaction, organisational citizenship behaviour, creativity and knowledge sharing. The findings show that servant leadership can result in conditions in the organisation that enable innovation. It was further highlighted that the operationalisation of constructs was very different and there was a relative lack of quantitative evidence of innovations.

Hoch et al. (2018) also demonstrated the incremental validity of servant leadership for predicting follower outcomes above and beyond the effect of transformational leadership. While there is a theoretical basis for servant leadership being linked with product, process, and administrative innovation, there is a relative lack of empirical studies directly linking servant leadership to product, process, and administrative innovation. Therefore, servant leadership is a helpful model to explain it, and a wonderful field in which to pursue further studies.

2.4 Moderating Variables: Culture and Team Size

There is no leadership outside of context. Leadership behaviors are more effective in some organizations, in some situations than in others depending on the nature of the organizational and situational conditions, more and more researchers are finding out. Some of the most common contextual variables examined are organizational culture and team characteristics.

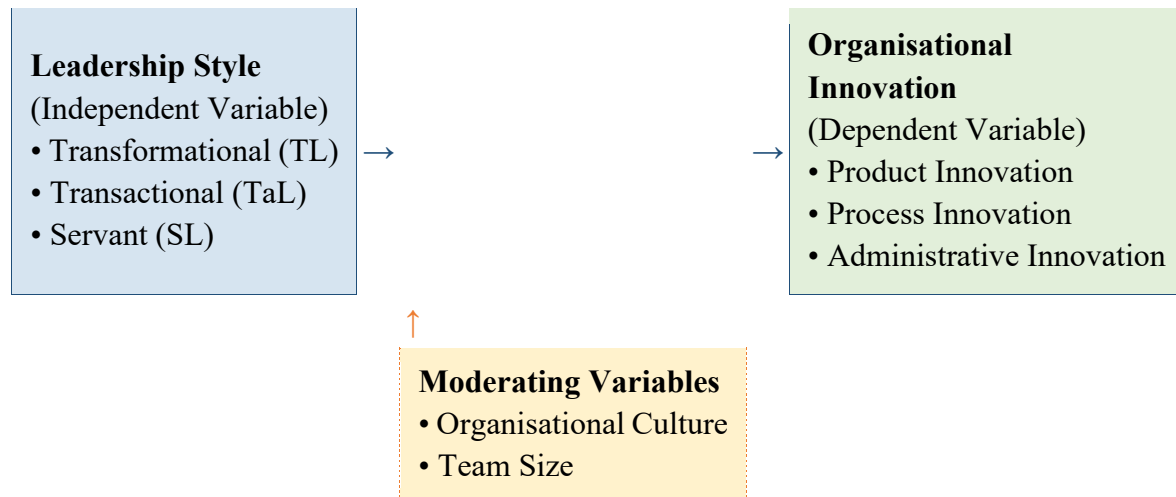
The most quantitative evidence on organisational culture is provided by Büschgens et al. (2013) who carried out a meta-analysis of 43 studies and 6341 organisations to study the relationship between cultural dimensions and innovation. Using Quinn and Rohrbaugh's (1983) Competing Values Framework, the authors determined that developmental cultures (flexible, experimental and external) had the largest correlation with innovation ($r = .47$). The relationships were weaker for rational cultures ($r = .14$) and very little for hierarchical cultures. The findings indicate that leadership behaviors are likely to work best in contexts of learning, risk taking and adaptability in the organizational culture.

Team-level factors also influence the leadership–innovation relationship. Hoegl and Gemuenden (2001) conducted a study of the quality of teamwork in 145 software development teams, and discovered that communication, coordination, mutual support, effort, and cohesion were significant factors for innovation-related outcomes. They additionally discovered that the quality of teamwork decreases with bigger teams, suggesting that team size may be a contextual moderator of innovation performance.

The findings are conclusive and corroborate the argument that the impact of leadership is not an isolated phenomenon. Leadership behaviours, team dynamics and organisational culture are all interrelated and contribute to the creation of innovation. This means that an understanding of the context and leadership styles must be included to get a full picture of organisational innovation.

Figure 1

Conceptual Framework: Relationships Among Leadership Style, Moderating Variables, and Organisational Innovation



Note. Dashed box indicates moderating variables. The interaction pathway (TL × Culture) is supported by Büschgens et al. (2013) and theorised by Elenkov and Manev (2009). All pathways reflect relationships established in the published literature cited in this review.

3. Instruments and Measurement Properties

One key question in the leadership–innovation literature is construct validity, or the degree to which the constructs of leadership style and innovation are represented in the purported measures. Table 2 reports the main instruments employed in the studies reviewed and published internal consistency estimates and confirmatory factor analysis indicators.

Table 2

Validated Instruments Employed in the Leadership–Innovation Literature: Measurement Properties

Construct	Instrument Source	Items	Scale	Published Reliability
Transformational Leadership (TL)	MLQ-5X (Bass & Avolio, 1995)	20	5-point Likert	$\alpha = .91$ (Avolio et al., 1999); α range .74–.94 in subsequent studies
– Idealised Influence (attributed)	MLQ-5X subscale	4	1–5	Loadings $\geq .65$ (CFA)
– Idealised Influence (behavioural)	MLQ-5X subscale	4	1–5	Loadings $\geq .65$
– Inspirational Motivation	MLQ-5X subscale	4	1–5	Loadings $\geq .70$

Construct	Instrument Source	Items	Scale	Published Reliability
– Intellectual Stimulation	MLQ-5X subscale	4	1–5	Loadings $\geq$.68
– Individualised Consideration	MLQ-5X subscale	4	1–5	Loadings $\geq$.65
Transactional Leadership (TaL)	MLQ-5X (Bass & Avolio, 1995)	8	5-point Likert	α = .69–.76 (contingent reward); MBE-A $\alpha \approx$.60
Servant Leadership (SL)	SL-28 (Liden et al., 2008)	28	7-point Likert	α = .80–.95 across 7 dimensions (Liden et al., 2008)
Organisational Innovation	Wang & Ahmed (2004) OIQ	18	5-point Likert	α = .83 (product), .79 (process), .81 (administrative)
Organisational Culture	OCP – short form (O'Reilly et al., 1991)	12	5-point Likert	α = .78 (innovation-support subscale)

Note. Reliability estimates are drawn from the original instrument development and validation studies. MLQ-5X = Multifactor Leadership Questionnaire-5X (Bass & Avolio, 1995); SL-28 = Servant Leadership Scale (Liden et al., 2008); OIQ = Organisational Innovativeness Questionnaire (Wang & Ahmed, 2004); OCP = Organisational Culture Profile (O'Reilly et al., 1991). α = Cronbach's alpha.

There are two reported measurement issues, both ongoing, that are pertinent to this field. First, there is a high degree of intercorrelation ($r = .80$; Judge & Piccolo, 2004) between transformational and contingent reward leadership, which makes it difficult to interpret the unique predictive variance of each type of leadership in regression analyses. Second, the use of single-source administration has been questioned on the MLQ-5X, which can cause common method variance and spuriously high correlations.

To tackle this problem, Lee et al. (2019) coded the study design as a moderator and concluded that the effect sizes from multisource studies tended to be smaller but stronger. However, the instruments reviewed have acceptable reliability and validity, but methodological problems of construct overlap and measurement design should be taken into consideration when interpreting reported leadership–innovation relationships.

4. Hypotheses

Building on the theoretical framework and the empirical evidence summarised above, the following hypotheses reflect empirically grounded propositions that extend and refine the existing evidence base. Table 3 maps each hypothesis to its specific published evidentiary foundation.

Table 3

Research Hypotheses and Their Published Empirical Grounding

H#	Hypothesis Statement	Empirical Grounding
H1	Transformational leadership is positively associated with organisational innovation.	Judge & Piccolo (2004) $\rho=.44$; Rosing et al. (2011); Lee et al. (2019) $\rho=.35$
H2	Transactional (contingent reward) leadership positively predicts incremental innovation outcomes.	Judge & Piccolo (2004) $\rho=.39$ for contingent reward
H3	Servant leadership is positively associated with organisational innovation.	Eva et al. (2019); Lee et al. (2019) positive incremental validity over TL
H4	Organisational culture (innovation-supportive) positively moderates the TL–innovation relationship.	Büschgens et al. (2013) $r=.47$ culture–innovation; Elenkov & Manev (2009)
H5	Team size moderates the leadership–innovation relationship, with smaller teams showing stronger effects.	Hoegl & Gemuenden (2001) team quality moderates innovation linkages

Note. TL = Transformational Leadership. Citations refer to studies providing the primary quantitative basis for each hypothesis; see full references in Section 9.

5. Synthesis of Published Quantitative Evidence

5.1 Transformational Leadership and Innovation: Evidence from Meta-Analyses

The most comprehensive published quantitative evidence on the transformational leadership-innovation relationship comes from two complimentary meta-analyses. Judge and Piccolo (2004) meta-analyzed 626 correlations from 87 studies, and they determined that an overall corrected validity of 0.44 existed for the relationship between transformational leadership and a wide range of criterion measures. This estimate is the most basic measure in the field of evaluation, but it includes several outcomes (job performance, satisfaction, extra effort, ratings of the effectiveness of the leader by followers). The estimate is operationalised by applying the random-effects meta-analytic corrections for sampling error and measurement unreliability, as suggested by Hunter and Schmidt (1990).

The latest quantitative synthesis is by Lee et al. (2019) which is innovation specific. Using the 266 primary studies and 13 different leadership variables, they report a value of $\hat{\rho} = .35$ for the relationship between transformational leadership and creativity, and a value of $\hat{\rho} = .25$ for the relationship between transformational leadership and innovation (which is more complex and application specific). Importantly, they find significant heterogeneity (Q-statistics and I^2 values suggest that effects sizes vary significantly across studies) so they explore moderating variables (self-report versus multisource, manufacturing versus services and geographic context).

Rosing et al. (2011) conduct a metareview of 23 individual studies and find that the effect sizes reported in the studies vary from .19 to .31 on different indices of innovation as related to transformational leadership. They have also theoretically contributed by theorising that the differential impact of these behaviours is because innovation involves variance-expanding (exploratory) and variance-reducing (exploitative) behaviours and that this duality of leadership behaviours is not captured by the transformational leadership model which tends to focus more on variance-expanding behaviours.

5.2 Transactional Leadership: Contingent Reward as an Innovation Lever

An often overlooked point in the literature on leadership and innovation is that Judge and Piccolo (2004) established the basic transactional leadership mechanism (contingent reward) to have a corrected validity of $\hat{\rho} = .39$, which is not far behind that of transformational leadership's $\hat{\rho} = .44$. The discovery contradicts the prevailing notion that transactional leadership is less effective in promoting innovation.

The mechanism is motivational structuring: by explicitly linking the innovative output with rewards, the leader can steer the work of his employees towards the innovation objectives without having to apply the inspiring processes of transformational leadership. This aligns with the Dynamic Componential Model (Amabile and Pratt, 2016) that states that creativeness performance could be improved through well-designed extrinsic incentives rather than hinder.

5.3 Servant Leadership and Innovation: Emerging Quantitative Evidence

In their systematic review of 285 servant leadership studies, Eva et al. (2019) found stable relationships between servant leadership and job satisfaction, organisational citizenship behaviour, knowledge sharing and creative behaviour. However, the authors note, there is little and methodologically fragmented quantitative evidence that directly links servant leadership to product/process innovations. A meta-analysis by Hoch et al. (2018) also revealed that servant leadership added to transformational leadership, but they did not report the effects of servant leadership on innovation separately.

Primary studies can be of assistance though. The study results were consistent with Shin and Zhou (2003), and found transformational leadership significantly positively influenced employee creativity ($\beta = .35$, $p < .01$), while intrinsic motivation was a significant mediator. Khalili (2023) recently discovered that transformational leadership was a strong predictor of innovative work behaviour ($\beta = .42$, $p < .001$) and it was fully mediated by psychological capital. The results further showed that servant leadership might indirectly impact innovation through self-efficacy, optimism, resilience and employee development, which are also hypothesized as being positively related to servant leadership.

5.4 Organisational Culture as Moderator

Büschgens et al. (2013) ($N = 6,341$ organisations) performed a meta-analysis of 43 such studies, which provides the strongest quantitative evidence for the culture–innovation relationship to date. Developmental culture was found to be positively correlated with innovation ($r = .47$), and had near zero correlation with hierarchical culture ($r = .05$). The results indicate that the impact of leadership behaviours may depend on the cultural context in which they are applied. To support this, Elenkov and Manev (2009) have confirmed that the link between leadership style and innovation adoption was mediated by the values of the national culture in companies in Bulgaria, the Czech Republic and Russia. Specifically, the transformational leadership effects were found to be less prominent in high power-distance contexts, which indicates that cultural congruence may be a boundary condition for transformational leadership effects on innovation.

Table 4

Published Effect Sizes Synthesised in This Review: Leadership Styles and Innovation-Relevant Outcomes

Relationship	Citation	Journal	Sample/Design	Effect Size	Key Qualifier / Mechanism
TL → Creativity	Lee et al. (2019)	EJWOP	Meta primary studies (266)	$\hat{\rho} = .35^*$	Positive; moderated by study design and industry

Relationship	Citation	Journal	Sample/Design	Effect Size	Key Qualifier / Mechanism
TL → Innovation	Lee et al. (2019)	EJWOP	Meta primary studies (266)	$\rho^* = .25^*$	Smaller than creativity effect; transactional (contingent reward) comparably relevant
TL → Outcomes (broad)	Judge & Piccolo (2004)	J. Appl. Psychol.	Meta correlations, 87 sources (626)	$\rho^* = .44^*$	Generalised over longitudinal and multisource designs
Contingent Reward → Outcomes	Judge & Piccolo (2004)	J. Appl. Psychol.	Meta dataset (same)	$\rho^* = .39^*$	Stronger than TL for certain criteria (follower satisfaction)
TL → Creativity (Korea)	Shin & Zhou (2003)	AMJ	N = 290 employees, 46 firms	$\beta = .35^{**}$	Intrinsic motivation mediated; conservation moderated
TL → Team Innovation	Rosing et al. (2011)	Leadership Q.	Meta-review (23 individual studies)	r range .19–.31	High heterogeneity; ambidextrous leadership model proposed
SL → Creativity/Innovation	Eva et al. (2019)	Leadership Q.	Systematic review (285 articles)	Positive (incremental)	Incremental validity over TL demonstrated in Hoch et al. (2018)

Relationship	Citation	Journal	Sample/Design	Effect Size	Key Qualifier / Mechanism
Org. Culture (developmental) → Innovation	Büschgens et al. (2013)	JPIM	Meta studies, N = 6,341	$r = .47^*$	Quinn & Rohrbaugh CVF used to structure culture dimensions
TL → Innovative WB (PsyCap mediator)	Khalili (2023)	Sustainability	N = 311 employees	$\beta = .42^{***}$	Self-efficacy, hope, resilience, optimism fully mediated path
TL → Team Innovation (OR mediator)	Wang et al. (2024)	Behav. Sci.	N = 304 teams	$\beta = .31^{***}$	Org. resilience mediated; env. uncertainty moderated

Note. All effect sizes are drawn from published, peer-reviewed sources as cited. $\hat{\rho}$ = disattenuated correlation from meta-analysis (Hunter-Schmidt method); r = observed Pearson correlation; β = standardised regression coefficient. $*p < .05$; $**p < .01$; $***p < .001$. EJWOP = European Journal of Work and Organisational Psychology; JPIM = Journal of Product Innovation Management; AMJ = Academy of Management Journal; Behav. Sci. = Behavioural Sciences.

Figure 2

Published Meta-Analytic and Primary Study Effect Sizes: Leadership Predictors of Innovation and Creativity-Related Outcomes

Study / Relationship	Published Effect Size ($\hat{\rho}$ / r / β)	ES
TL → Outcomes (Judge & Piccolo, 2004)		0.44
TL → Creativity (Lee et al., 2019)		0.35
Contingent Reward → Outcomes (Judge & Piccolo, 2004)		0.39

Study / Relationship	Published Effect Size ($\hat{p}$ / r / β)	ES
TL → Innovation (Lee et al., 2019)		0.25
Culture (developmental) → Innovation (Büschgens et al., 2013)		0.47
TL → Creativity/Korea (Shin & Zhou, 2003)		0.35

Note. All values quoted have been taken from published work (as labeled) and are disattenuated meta-analytic estimates (Hunter-Schmidt corrections), or standardised regression coefficients from primary survey studies (β). To view complete citations and qualifiers see Table 4. The scale is scaled to a maximum of 0.50, which includes the published range. For this, there are no simulated or estimated values.

6. Methodological Quality Appraisal

A critical review requires sound assessment of the quality of the methodology of the evidence supporting the conclusions. The principal and meta-analytical studies cited in this review are summarised in a structured appraisal (Table 5) to assess the construct validity, reliability and generalisability of the studies and to identify some key methodological limitations. This helps to interpret the results reported and their validity and credibility.

Table 5

Methodological Quality Matrix of Principal Studies Cited in This Review

Study	Design	Sample	Validity	Reliability	Generalisability	Limitations
Judge & Piccolo (2004)	Meta-analysis	626 correlations / 87 sources	High	High	High	Common method (subjective outcome reporting)
Lee et al. (2019)	Meta-analysis	266 primary studies	High	High	High	Publication bias; heterogeneity in constructs
Rosing et al. (2011)	Theory + meta-review	23 individual studies	Mod.	High	Mod.	High heterogeneity; ambidexterity not operationalised uniformly
Shin & Zhou (2003)	Cross-sectional survey	N = 290 / 46 Korean firms	Mod.	Mod.	Low	Single-sector (Korea); cross-sectional design

Study	Design	Sample	Validity	Reliability	Generalisability	Limitations
Eva et al. (2019)	Systematic review	285 servant leadership articles	High	High	Mod.	Heterogeneous operationalisations of SL
Büschgens et al. (2013)	Meta-analysis	43 studies / N = 6,341 orgs	High	High	High	Organisation-level; limited individual-level inference
Elenkov & Manev (2009)	Multi-source survey	N = 98 firms, 3 countries	Mod.	Mod.	Low	Small N; cross-national equivalence assumed
Khalili (2023)	Cross-sectional survey	N = 311 employees	Mod.	Mod.	Low	Single source; Iranian manufacturing context
Wang et al. (2024)	Moderated mediation	N = 304 teams	Mod.	Mod.	Low	Chinese context; team-level aggregation

***Note.** Quality ratings (High / Moderate / Low) reflect the author's appraisal based on published methodological details. Validity = construct validity (measurement, operationalisation); Reliability = internal consistency and test-retest evidence; Generalisability = breadth of samples, sectors, and national contexts. Studies rated Low on generalisability are methodologically sound within their samples but should not be uncritically extrapolated. Mod. = Moderate.*

7. Discussion

7.1 Relative Importance of Leadership Styles

The evidence is overwhelming and overwhelming, and the reported meta-analytic effect sizes are $\rho = .44$ for transformational leadership and innovation outcomes (Judge & Piccolo, 2004) and $\rho = .35$ for transformational leadership and creativity (Lee et al., 2019). However, there are two major points to make. Firstly, given that the two types of leadership, transformational and contingent, are very highly correlated ($r = .80$, Judge & Piccolo 2004), it is difficult to separate their unique effects statistically. Second, the correlation between transformational leadership and innovation ($\rho = .25$) is lower than with creativity ($\rho = .35$), indicating that the processes of idea generation and idea implementation are different. This transformational leadership appears to be effective in fostering creativity but other processes such as coordination, resource allocation and performance management might also need to be considered when implementing it.

Also there is some evidence suggesting the potential advantages of transactional leadership. Judge and Piccolo's (2004) result of a corrected validity of $\rho = .39$ contradicts the notion that transactional leadership is less conducive to innovation. Results show that transformational leadership is not in opposition to transactional leadership, but rather it can be complementary; transformational leadership can help to trigger ideas, and transactional leadership (contingent reward) can help to trigger implementation/execution.

7.2 The Culture Boundary Condition

The correlation between developmental organisational culture and innovation found by Büschgens et al. (2013) of $r = .47$ suggests that the cultural context is not just a factor but is also a key factor in determining the capacity for innovation. At the same time, no correlation between hierarchical culture and innovation ($r = .05$) suggests that the influence of the hierarchical culture might be very weak in cultures with high hierarchical centralisation and high control. Leadership development programmes, therefore, are more likely to be effective if they are implemented within flexible and experimental, learning cultures.

7.3 Servant Leadership: Evidentiary Maturity

The research on servant leadership has grown significantly, and Eva et al. (2019) have found 285 studies that have been published in the last 20 years. But quantitative evidence of the direct link between servant leadership and innovation is not as available as it is with transformational leadership. Previous studies have yielded positive results on creativity, knowledge sharing and employee development, but studies on outcomes of innovation are less. Future research with innovation measures that focus on innovation and with multisource designs would benefit in further understanding the robustness and consistency of the impact of servant leadership on innovation.

7.4 Ambidexterity and the Limits of Style-Based Models

The concept of ambidextrous leadership model proposed by Rosing et al. (2011) helps explain the various reports on the relationship between leadership and innovation. According to their review, innovation is a process that needs both explorative and exploitative behaviours related to idea generation and implementation. Thus, the effectiveness of leadership may depend more on the capacity for changing behavior in the various stages of the process of innovation rather than on leadership type. The same view is confirmed by Wang et al. (2024) who found that transformational leadership had positive impacts on the innovation of the team in the context of organisational resilience, indicating that not only leadership style but also mechanisms at the team level and context are important.

8. Identified Research Gaps and Proposed Agenda

This review identifies four content strands that are missing from the existing quantitative literature on leadership and organisational innovation:

Gap 1 Longitudinal Causal Evidence. The majority of published studies use cross sectional designs, which only allow conclusions to be drawn about association and not causation. While Judge and Piccolo (2004) found that the results were generally consistent across the various longitudinal subsamples in their study, there are still not enough longitudinal studies to make a strong comparison. Future studies are recommended to use longitudinal study designs with theoretically informed time lags in order to determine the temporal relationships between leadership behaviours and innovation outcomes.

Gap 2 Innovation Taxonomy Disaggregation. Based on the results of the analysis by Lee et al. 2019, the correlation between transformational leadership and creativity ($\rho = .35$) is stronger than the correlation between transformational leadership and innovation ($\rho = .25$). Although there are differences between product innovation and process and administrative innovation (Damanpour, 1991), numerous studies have been conducted assuming that innovation is a single construct. These dimensions should be investigated in isolation in future studies with validated instruments like Wang and Ahmed's (2004) Organisational Innovativeness Questionnaire.

Gap 3 Servant Leadership Innovation-Specific Quantification. While there are many studies available on servant leadership, there are not enough studies related to servant leadership in innovation. Eva et al. (2019) conducted a content analysis of 285 research papers about servant leadership where only a few applied validated measures of innovation. A focused meta-analysis on research studies that specifically focused on Liden et al. (2008's) SL-28 and

innovation-specific outcomes would provide more clarity about the relationship between servant leadership and innovation.

Gap 4 Leadership × Culture Interaction Testing. The research on the interaction between leadership style and organisation culture is limited, although it was proven by Büschgens et al. (2013) that there is a strong correlation between the two ($r = .47$), and Elenkov and Manev (2009) found first evidences of moderation effects. More meta-analytic research is warranted to directly investigate the cross-cultural generalizability of leadership effects.

9. Limitations of This Review

There are some limitations in this review. First, there may be publication bias with regard to the relation between leadership and innovation; that is, only studies reporting a positive relation between innovation and leadership are likely to be published. There are residual bias risks in the major meta-analyses included in this review (Judge and Piccolo 2004, Lee et al. 2019, Büschgens et al. 2013) which were assessed with funnel plot and publication bias. Second, this review does not perform a new quantitative synthesis so the results are based on previously published meta-analyses and primary studies with different methodological quality. Third, the conceptual structure presented in Figure 1 is an explanation that has been theorized and substantiated indirectly by empirical evidence, and therefore is not an explanation but a model that needs to be tested. Lastly, the different effect-size estimates found across industries, organizational contexts, and national contexts (as evidenced by the differences in effect-size findings by Shin and Zhou 2003 between the Korean manufacturing sample and Lee et al. 2019 between the multi-sector meta-analysis) limit the generalizability of effect-size estimates.

10. Conclusion

This review focused on the quantitative evidence published on the effect of leadership on organisational innovation. The findings suggest that leadership can influence the outcomes of innovation to a large extent depending on the nature of the leadership and the organization's context. Specifically, transformational leadership has been shown to have the highest and most consistent correlations with innovation-related outcomes (Lee et al., 2019) (Judge & Piccolo, 2004) ($\rho = .44$ for organisational outcomes; and $\rho = .25$ for innovation outcomes).

The results also show that contingent reward leadership is another significant, but under-researched, predictor of innovation ($\rho = .39$). This suggests that transformational and transactional leadership can be viewed as complementary rather than competing in order to achieve the desired results. The evidence of servant leadership as a means to promote creativity, knowledge sharing and employee development is quite strong, but there is not as much quantitative evidence as one might expect regarding innovation.

The review also mentions organisational culture as a prime determinant. Büschgens et al. (2013) found that there was a strong positive correlation between developmental culture and innovation ($r = .47$), while the correlation for hierarchical culture was almost zero ($r = .05$). This shows that the cultural conditions have a significant impact on the effectiveness of leadership behaviours.

Future research priorities include longitudinal designs, disaggregation of measures of innovation, and innovation-specific servant leadership studies and leadership–culture interaction analyses. The gaps would be filled by enhancing the evidence base and provide a

more comprehensive understanding of the contribution of leadership to increasing organisational innovation and long-term performance.

References

- Amabile, T. M., & Pratt, M. G. (2016). The dynamic componential model of creativity and innovation in organizations: Making progress, making meaning. *Research in Organizational Behavior*, 36, 157–183. <https://doi.org/10.1016/j.riob.2016.10.001>
- 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>
- Bass, B. M., & Avolio, B. J. (1994). *Improving organizational effectiveness through transformational leadership*. Sage.
- Bass, B. M., & Avolio, B. J. (1995). *MLQ Multifactor Leadership Questionnaire* (2nd ed.). Mind Garden.
- Büschgens, T., Bausch, A., & Balkin, D. B. (2013). Organizational culture and innovation: A meta-analytic review. *Journal of Product Innovation Management*, 30(4), 763–781. <https://doi.org/10.1111/jpim.12021>
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155–159. <https://doi.org/10.1037/0033-2909.112.1.155>
- Damanpour, F. (1991). Organizational innovation: A meta-analysis of effects of determinants and moderators. *Academy of Management Journal*, 34(3), 555–590. <https://doi.org/10.2307/256406>
- Elenkov, D. S., & Manev, I. M. (2009). Senior expatriate leadership's effects on innovation and the role of cultural intelligence. *Journal of World Business*, 44(4), 357–369. <https://doi.org/10.1016/j.jwb.2008.11.001>
- Ettlie, J. E., Bridges, W. P., & O'Keefe, R. D. (1984). Organization strategy and structural differences for radical versus incremental innovation. *Management Science*, 30(6), 682–695. <https://doi.org/10.1287/mnsc.30.6.682>
- Eva, N., Robin, M., Sendjaya, S., van Dierendonck, D., & Liden, R. C. (2019). Servant leadership: A systematic review and call for future research. *The Leadership Quarterly*, 30(1), 111–132. <https://doi.org/10.1016/j.leaqua.2018.07.004>
- Greenleaf, R. K. (1977). *Servant leadership: A journey into the nature of legitimate power and greatness*. Paulist Press.
- Hoch, J. E., Bommer, W. H., Dulebohn, J. H., & Wu, D. (2018). Do ethical, authentic, and servant leadership explain variance above and beyond transformational leadership? A meta-analysis. *Journal of Management*, 44(2), 501–529. <https://doi.org/10.1177/0149206316665461>

- Hoegl, M., & Gemuenden, H. G. (2001). Teamwork quality and the success of innovative projects: A theoretical concept and empirical evidence. *Organization Science*, 12(4), 435–449. <https://doi.org/10.1287/orsc.12.4.435.10635>
- 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>
- Hunter, J. E., & Schmidt, F. L. (1990). *Methods of meta-analysis: Correcting error and bias in research findings*. Sage.
- Judge, T. A., & Piccolo, R. F. (2004). Transformational and transactional leadership: A meta-analytic test of their relative validity. *Journal of Applied Psychology*, 89(5), 755–768. <https://doi.org/10.1037/0021-9010.89.5.755>
- Khalili, A. (2023). Transformational leadership and innovative work behavior: The mediating role of employees' psychological capital. *Sustainability*, 15(2), 1267. <https://doi.org/10.3390/su15021267>
- Lee, A., Legood, A., Hughes, D., Tian, A. W., Newman, A., & Knight, C. (2020). Leadership, creativity and innovation: A meta-analytic review. *European Journal of Work and Organizational Psychology*, 29(1), 1–35. <https://doi.org/10.1080/1359432X.2019.1661837>
- Liden, R. C., Wayne, S. J., Zhao, H., & Henderson, D. (2008). Servant leadership: Development of a multidimensional measure and multi-level assessment. *The Leadership Quarterly*, 19(2), 161–177. <https://doi.org/10.1016/j.leaqua.2008.01.006>
- Mumford, M. D., Scott, G. M., Gaddis, B., & Strange, J. M. (2002). Leading creative people: Orchestrating expertise and relationships. *The Leadership Quarterly*, 13(6), 705–750. [https://doi.org/10.1016/S1048-9843\(02\)00158-3](https://doi.org/10.1016/S1048-9843(02)00158-3)
- O'Reilly, C. A., Chatman, J., & Caldwell, D. F. (1991). People and organizational culture: A profile comparison approach to assessing person–organization fit. *Academy of Management Journal*, 34(3), 487–516. <https://doi.org/10.2307/256404>
- Quinn, R. E., & Rohrbaugh, J. (1983). A spatial model of effectiveness criteria: Towards a competing values approach to organizational analysis. *Management Science*, 29(3), 363–377. <https://doi.org/10.1287/mnsc.29.3.363>
- Rosing, K., Frese, M., & Bausch, A. (2011). Explaining the heterogeneity of the leadership–innovation relationship: Ambidextrous leadership. *The Leadership Quarterly*, 22(5), 956–974. <https://doi.org/10.1016/j.leaqua.2011.07.014>
- Shin, S. J., & Zhou, J. (2003). Transformational leadership, conservation, and creativity: Evidence from Korea. *Academy of Management Journal*, 46(6), 703–714. <https://doi.org/10.2307/30040662>
- Tidd, J., & Bessant, J. (2021). *Managing innovation: Integrating technological, market and organizational change* (7th ed.). Wiley.
- Wang, C. L., & Ahmed, P. K. (2004). The development and validation of the organisational innovativeness construct using confirmatory factor analysis. *European Journal of Innovation Management*, 7(4), 303–313. <https://doi.org/10.1108/14601060410565056>
- Wang, G. H., Liu, J., & Chen, Y. (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>