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## Research Articles

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### Transformational Leadership on Teachers' Innovative Behavior with Psychological Empowerment and Organizational Culture on Higher Vocational Colleges in Henan Province

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#### Abstract

The objectives of this research were (1) to examine components and indicators of transformational leadership, teachers' innovative behavior, psychological empowerment, and organizational culture in higher vocational colleges under Henan Province, (2) to examine the model of psychological empowerment in the relationship between transformational leadership, organizational culture and teachers' innovative behavior in higher vocational colleges in Henan Province, and (3) to investigate effect of transformational leadership on teachers' innovative behavior, psychological empowerment and organizational culture in higher vocational colleges under Henan Province.

The research employed a mixed method approach combining quantitative and qualitative research methodologies. The study used Structural Equation Modeling (SEM) to test hypothesized relationships among variables. Statistical analyses included confirmatory factor analysis (CFA) and path analysis. Data collection involved surveys from teachers in higher vocational colleges in Henan Province. The measurement model demonstrated strong reliability and validity with excellent model fit indices (Chi/df = 1.10, RMSEA = 0.0172, CFI = 0.998, TLI = 0.998).



The research results showed that: (1) key components of transformational leadership included idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration; teachers' innovative behaviors involved idea generation, implementation, and diffusion; psychological empowerment covered meaningfulness, competence, autonomy, and impact; organizational culture consisted of clan, democracy, hierarchy, and market types, (2) transformational leadership positively influenced teachers' innovative behavior through psychological empowerment and organizational culture with strong statistical relationships ( $p < .001$ ) and high mean scores (3.83–4.06), and (3) significant direct effects were identified: transformational leadership influences organizational commitment ( $\beta = 0.993$ ), psychological empowerment ( $\beta = 0.704$ ), and teachers' innovative behaviors ( $\beta = 0.370$ ); indirect effects showed that transformational leadership affects teachers' innovative behaviors through organizational commitment ( $\beta = 0.617$ ) and psychological empowerment ( $\beta = 0.260$ ), with organizational commitment emerging as the most crucial mediator.

**Keywords:** Transformational Leadership, Teachers' Innovative Behavior, Psychological Empowerment, Organizational Culture, Higher Vocational Colleges

## Introduction

With the globalization and integration of the world economy, especially under the Belt and Road Initiative, the exchanges between China and foreign countries in business, science and technology culture are increasingly close. In order to seek economic development, China needs to grasp and understand the technological trends of foreign countries in a timely manner, at the same time, promote our culture into the country, attract foreign enterprises to settle in China, promote the economic development of our country (Yuan F. Zhao X, 2017). College education is a major national plan. College education serves as a carrying and turning platform base for the transformation of students' roles and social roles. It cultivates the comprehensive ability, personal quality and professional ability of college students. How to improve the effective of China's college education, learn from the old and absorb the new Cultivating excellent professional talents for China is a question worthy of our consideration.



In the contemporary educational landscape, transformational leadership has emerged as a critical factor influencing organizational culture and individual performance. Transformational leadership, characterized by attributes such as idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration, has been shown to significantly impact various organizational outcomes, including innovation. This is particularly relevant in higher vocational colleges, where the need for innovation in teaching practices and curriculum development is paramount to meeting the demands of the evolving job market. The rapidly evolving educational landscape has necessitated a shift in leadership styles, with transformational leadership gaining prominence for its profound impact on organizational culture and individual performance. Transformational leadership is characterized by attributes such as idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. These elements collectively create an environment that fosters innovation and creativity, making transformational leadership particularly relevant in educational settings where continuous improvement and adaptability are essential (Northouse, P. G. 2018)

In higher vocational colleges, the importance of transformational leadership is magnified. These institutions are tasked with equipping students with the practical skills and knowledge needed for specific trades and professions. This requires a dynamic and innovative approach to teaching and curriculum development. Henan Province, as a significant educational hub in China, hosts numerous higher vocational colleges that play a crucial role in preparing students for the workforce. These colleges face unique challenges, such as the need to continually update curricula, adopt new teaching methodologies, and strengthen industry linkages to ensure their programs remain relevant and effective.

Despite the recognized importance of transformational leadership, there is a dearth of research examining its specific impact on teachers' innovative behavior in higher vocational colleges in Henan Province. Innovative behavior among teachers is critical for the development and implementation of new ideas, practices, and technologies that can enhance educational outcomes and better align with industry needs. This study aims to address this gap by systematically exploring the influence factors of transformational leadership on teachers' innovative behavior, considering both direct and indirect effects through mediating and

moderating factors. Significance of research is this research holds significant value in both theoretical and practical domains.

### Research Objectives

1. To examine components and indicators of transformational leadership on teachers' innovative behavior psychological empowerment and organizational culture on higher vocational colleges in Henan Province.

2.To examine the model of psychological empowerment in the relationship between transformational leadership, organizational culture and teachers' innovative behavior on higher vocational colleges in Henan Province.

3.To investigate effect of transformational leadership on teachers' innovative behavior, psychological empowerment and organizational culture on higher vocational colleges in Henan Province.

### Literature Review

The current literature review is largely descriptive and would benefit from deeper critical analysis and synthesis. While relevant studies are cited, the discussion does not sufficiently evaluate, compare, or integrate prior findings.

Recent research continues to confirm that transformational leadership plays a significant role in enhancing innovative behavior through multiple psychological and organizational mechanisms. For instance, studies have demonstrated that transformational leadership positively influences employee outcomes such as performance, engagement, and innovation through mediating variables like psychological empowerment and work engagement (Huang et al., 2025). Similarly, Mohammed and Al-Abrrow (2023) highlight that psychological empowerment serves as a critical mediating mechanism linking leadership styles to innovative behavior, reinforcing the importance of internal motivational processes in organizational innovation . More recent empirical work also emphasizes the simultaneous role of psychological empowerment and organizational culture as key mediators in the leadership–innovation relationship, suggesting a more complex, multi-pathway mechanism (Noekent et al., 2025).

In addition to incorporating recent studies, the manuscript would benefit from a more critical synthesis of the literature by comparing differing theoretical perspectives. Classical organizational culture theories (e.g., Schein, 2010) emphasize shared values, norms, and underlying assumptions as foundational drivers of behavior, whereas the competing values framework (Cameron & Quinn, 2019) conceptualizes culture as dynamic and categorized into distinct types (e.g., clan, adhocracy, hierarchy, and market). These perspectives differ in their assumptions about how culture influences innovation—Schein (2010) focuses on deep structural elements, while Cameron and Quinn (2019) highlight adaptability and flexibility as key to innovation. Furthermore, Martins and Terblanche (2014) argue that innovation-supportive cultures require deliberate organizational practices such as risk-taking, open communication, and support for creativity. When compared with leadership theories (Bass, 1985; Judge & Piccolo, 2004), it becomes evident that transformational leadership not only directly influences innovation but also shapes the organizational context in which innovation occurs. However, more recent studies suggest that this relationship is not linear; instead, it is mediated and moderated by multiple psychological and contextual factors, such as leader identification and innovation climate (Wang et al., 2025).

Despite these advances, several important research gaps remain. First, although prior studies have extensively examined the direct relationship between transformational leadership and innovative behavior, fewer studies have simultaneously investigated the combined mediating roles of psychological empowerment and organizational culture within a single integrated model. Existing research often isolates these variables rather than examining their joint and sequential effects (Helalat et al., 2023). Second, much of the empirical literature has been conducted in corporate, healthcare, or industrial contexts, with relatively limited attention given to the educational sector, particularly higher vocational education. Third, while recent studies highlight complex mediation and moderation mechanisms, there remains a lack of context-specific research that captures how these relationships operate within regional and institutional settings, such as vocational colleges in Henan Province.

Accordingly, the present study addresses these gaps by proposing and empirically testing an integrated model that examines the simultaneous mediating roles of psychological empowerment and organizational culture in the relationship between transformational

leadership and teachers' innovative behavior. By situating the analysis within the context of higher vocational education, this study contributes to extending existing leadership and innovation theories into a relatively underexplored educational setting, while also providing a more comprehensive understanding of the multi-level mechanisms underlying innovative behavior.

Strengthening the literature review in this way will improve the academic rigor of the manuscript and provide a clearer justification for the study's significance and contribution.

The theoretical contribution of the study requires clearer and more explicit articulation. While the manuscript draws on the concept of transformational leadership, the integration with established leadership and innovation theories remains limited. Foundational works such as Bernard M. Bass (1985) and subsequent meta-analytical and empirical studies (e.g., Judge & Piccolo, 2004; Hoch et al., 2018) should be more thoroughly connected to the study's framework. In addition, the manuscript would benefit from stronger alignment with contemporary research on leadership and innovation, particularly studies highlighting the mediating role of psychological empowerment in fostering creativity and innovative behavior (Kang & Lee, 2020; Wang & Liu, 2023).

The authors are encouraged to explicitly clarify how their proposed model extends or differs from prior studies (e.g., Wang & Zhu, 2020), and to clearly articulate the novel theoretical contribution of this research. This may include specifying whether the contribution lies in contextual application (e.g., higher vocational colleges in Henan Province), model integration, or the identification of new relational mechanisms among variables.

## Research Methodology

### Research Design

The study demonstrates strong methodological rigor through the appropriate application of Structural Equation Modeling (SEM), Confirmatory Factor Analysis (CFA), and path analysis. The reported model fit indices (e.g., RMSEA, CFI, and TLI) indicate an excellent fit between the proposed model and the empirical data. In addition, the sample size is adequate and was obtained using a stratified random sampling technique, enhancing the reliability and generalizability of the findings.

### Methods

Step 1 to study the components of transformational leadership on teachers' innovative behaviour psychological empowerment and organizational culture on in higher vocational colleges under Henan Province.

Step 2 to examine the mediating role of psychological empowerment in the relationship between transformational leadership and teachers' innovative behaviour in higher vocational colleges in Henan Province.

Step 3 To investigate how organizational culture affects the mediation effect of psychological empowerment on the relationship between transformational leadership and teachers' innovative behavior in higher vocational colleges in Henan Province.

### Population and Sample

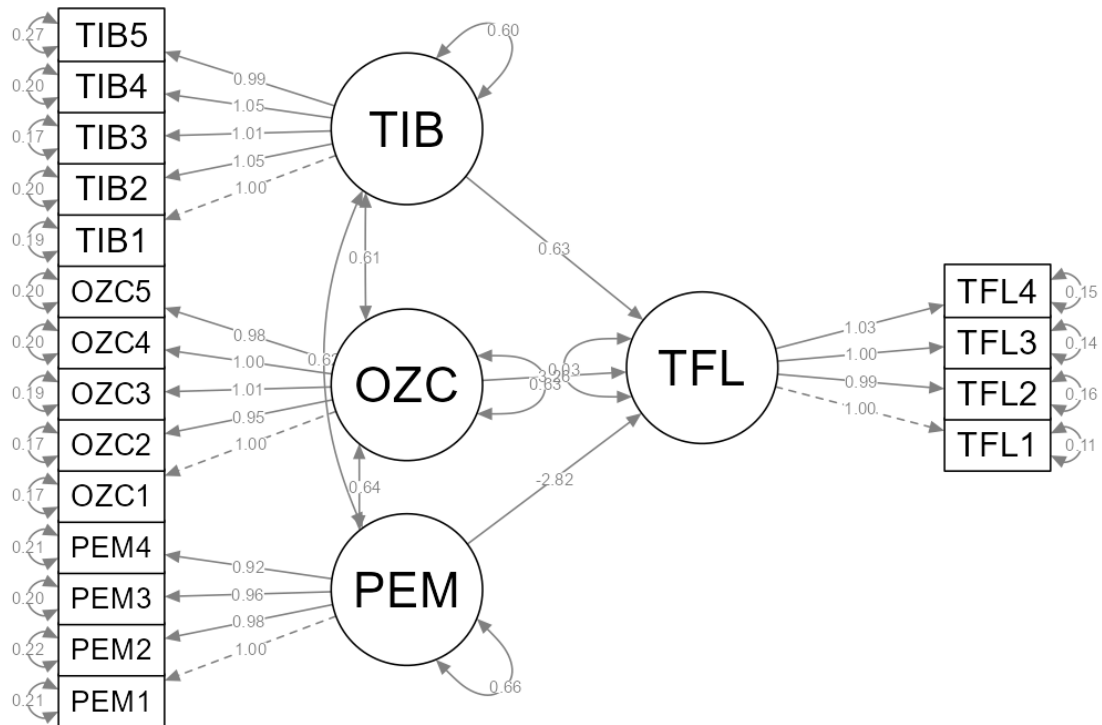
The population of 15 higher vocational colleges in Henan Province including administrator 100,20, Professor 4354 and teachers 13,244, a total of 27,618 people. Sample were 379 administrators and lecturers from 15 higher vocational colleges in Henan Province. The researcher determined sample size with Krejcie and Morgan's table (1970), and obtained by the stratified random sampling technique.

### Research Instruments

Semi-structured interviews, five-point rating scale questionnaire.

### Data Collecting and Data Analysis

According to the verification result of measurement model, the researcher established the Structure Equation Model to test the hypothesis, including the model graph, parameter estimation, fitting index, hypothesis verification report and other relevant information.



**Figure 1** Structural Equation Models and Model Evaluation in Unstandardized

Chi-square=143.0 df =125 CMIN/df =1.14 n=379 CLI=0.998 TLI = 0.997 RMSEA=0.020  
SRMR=0.011 (Unstandardized)

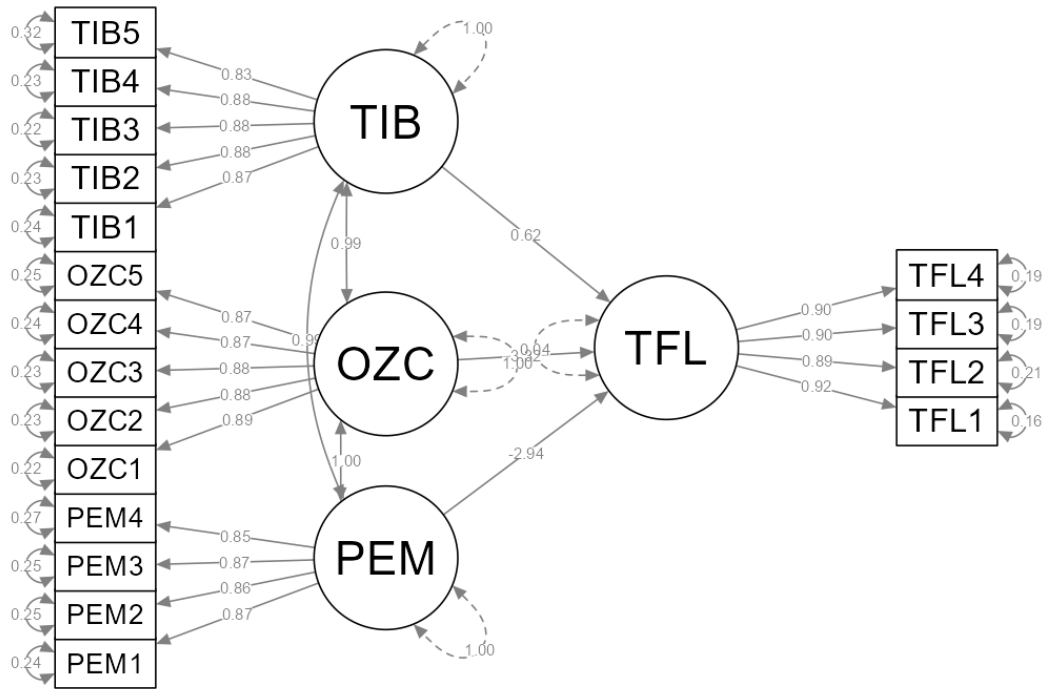


Figure 2 Structural Equation Models and Model Evaluation in Unstandardized

## Research Results

Chi-square=143.0 df =125 CMIN/df =1.14 n=379 CLI=0.998 TLI = 0.997 RMSEA=0.020 SRMR=0.011 (Standardized)

Table 1 Measurement model fit valuation modelling

Measure	Estimate	Threshold	Interpretation
CMIN	143	-	-
df	125	-	-
CMIN/df	1.14	Between 1 to 3	Excellent
p	0.124	> 0.05	Excellent
RMSEA	0.020	<0.05	Excellent
SRMR	0.011	<0.05	Excellent
CFI	0.998	0.80	Excellent
TLI	0.997	0.80	Excellent



Table 1 The results of the confirmatory factor analysis (CFA) indicate an excellent model fit with empirical data. The CMIN/df value of 1.14 falls within the acceptable range of 1 to 3, suggesting a good model fit. The p-value of 0.182 is greater than 0.05, indicating no significant difference between the specified model and the observed data. The RMSEA and SRMR values are both below 0.05 (0.020 and 0.011, respectively), confirming a high level of model adequacy. Additionally, the CFI and TLI values of 0.998 and 0.997 exceed the threshold of 0.80, demonstrating a strong fit. In conclusion, the developed model effectively explains the factor structure and exhibits a high degree of structural validity.

**Table 2** Hypothesis testing direct effect

Hypothesis	Dep	Pred	unstandardized	standardized	p-value
H1	TIB	PEM	0.368	0.370	***
H2	TIB	OZC	0.610	0.621	***
H3	PEM	TFL	0.669	0.704	***
H4	PEM	OZC	0.299	0.303	***
H5	OZC	TFL	0.957	0.993	***

The structural equation model analysis reveals that all components in the model have statistically significant positive relationships. Transformational leadership (TFL) strongly influences organizational commitment (OZC) with a remarkably high coefficient of 0.993 and significantly impacts employee motivation (PEM) with a coefficient of 0.704. Meanwhile, organizational commitment (OZC) has the strongest direct influence on teacher innovative behaviors (TIB) ( $\beta = 0.621$ ), followed by perceived employee motivation (PEM) with a moderate influence ( $\beta = 0.370$ ). These findings indicate that developing transformational leadership in educational institutions will generate positive cascading effects through organizational commitment and staff motivation, ultimately enhancing teacher innovative behaviors. Notably, fostering organizational commitment emerges as the most crucial mechanism for maximizing teacher innovative behaviors.

**Table 3** Hypothesis testing indirect effect

Hypothesis	Indirect	unstandardized	standardized	p-value
H6	OZC → PEM → TIB	0.110	0.112	***
H7	TFL → PEM → TIB	0.246	0.260	***
H8	TFL → OZC → TIB	0.584	0.617	***
H9	TFL → OZC → PEM → TIB	0.105	0.111	***

The analysis of indirect effects in the structural equation model reveals significant mediation pathways that further explain the relationship dynamics among the variables. All four indirect effect hypotheses were supported with high statistical significance ( $p < 0.001$ ). Notably, the strongest indirect effect is observed in H8 (TFL → OZC → TIB) with a standardized coefficient of 0.617, indicating that transformational leadership substantially influences teacher innovative behaviours through organizational commitment. The second strongest indirect pathway is H7 (TFL → PEM → TIB) with a standardized coefficient of 0.260, demonstrating that transformational leadership also significantly affects teacher innovative behaviors through employee motivation. Additionally, organizational commitment influences teacher innovative behaviors indirectly through employee motivation (H6:  $\beta = 0.112$ ), while a complete sequential mediation exists where transformational leadership affects teacher innovative behaviors through both organizational commitment and employee motivation sequentially (H9:  $\beta = 0.111$ ). These findings highlight the complex, multi-pathway influence of transformational leadership on teacher innovative behaviors, with organizational commitment serving as the most powerful mediating mechanism in this relationship network.

Some findings, particularly the unusually high standardized coefficients (e.g.,  $\beta = 0.993$ ), require further clarification and more in-depth discussion. Such high effect sizes may raise concerns regarding potential methodological issues. The authors are encouraged to carefully examine and report on possible sources of bias, including:

1. Multicollinearity among variables, which may inflate parameter estimates, and
2. Common method bias, given that the data appear to be collected from a single source and method.

## Research Discussion

The findings of this study provide important insights into the relationships among transformational leadership, psychological empowerment, organizational culture, and teachers' innovative behavior in higher vocational colleges in Henan Province. The results not only confirm existing theoretical perspectives but also extend current knowledge by integrating these variables within a comprehensive structural model.

First, the study identified the key components of transformational leadership, teachers' innovative behavior, psychological empowerment, and organizational culture. The dimensions of transformational leadership—idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration—are consistent with the foundational theory proposed by Bass (1985) and supported by subsequent empirical research (Judge & Piccolo, 2004; Hoch et al., 2018). Similarly, the classification of organizational culture into clan, adhocracy, hierarchy, and market types aligns with the competing values framework (Cameron & Quinn, 2019), while the dimensions of psychological empowerment (meaningfulness, competence, autonomy, and impact) reflect established conceptualizations in organizational behavior literature (Amundsen & Martinsen, 2015; Xanthopoulou & Bakker, 2015). The identification of teachers' innovative behavior as a multidimensional construct involving idea generation, implementation, and diffusion is also consistent with prior studies emphasizing innovation as a process rather than a single outcome (Martins & Terblanche, 2014). These findings suggest that innovation in educational settings is a complex, multi-dimensional phenomenon shaped by both individual and organizational factors.

Second, the results indicate that transformational leadership has a significant positive influence on teachers' innovative behavior, both directly and indirectly through psychological empowerment and organizational culture. This finding is consistent with prior research demonstrating that transformational leaders enhance employees' creativity and innovation by fostering intrinsic motivation and supportive work environments (Kang & Lee, 2020; Wang & Liu, 2023). The strong model fit indices further confirm the robustness of the proposed model, suggesting that the integration of leadership, psychological, and organizational variables provides a comprehensive explanation of innovative behavior in the educational context. Moreover, the mediating role of psychological empowerment highlights the importance of

internal cognitive and motivational states in translating leadership practices into innovative outcomes, supporting previous findings by Laschinger and Wong (2016) and Newman et al. (2017).

Third, the structural equation modeling results reveal significant direct and indirect effects of transformational leadership on teachers' innovative behavior. Notably, transformational leadership demonstrated a very strong effect on organizational culture ( $\beta = 0.993$ ) and a substantial effect on psychological empowerment ( $\beta = 0.704$ ), which in turn influenced innovative behavior. The indirect effects further indicate that organizational culture serves as the most influential mediator in the relationship between transformational leadership and innovative behavior. This finding is consistent with theoretical perspectives suggesting that leaders play a critical role in shaping organizational culture, which subsequently influences employee attitudes and behaviors (Schein, 2010; O'Reilly et al., 2014). Additionally, the significant mediating role of psychological empowerment supports the argument that empowered individuals are more likely to engage in creative and innovative activities due to increased autonomy, competence, and sense of impact (Amundsen & Martinsen, 2015; Wang & Zhu, 2020).

The finding that organizational culture is the strongest mediator provides an important contribution to the literature. While previous studies have examined psychological empowerment as a key mediator (Kang & Lee, 2020; Wang & Liu, 2023), fewer studies have emphasized the dominant role of organizational culture in the educational context. This suggests that, in higher vocational colleges, the broader institutional environment may play a more critical role than individual psychological factors in shaping innovative behavior. A supportive culture that encourages collaboration, risk-taking, and knowledge sharing is essential for fostering innovation, as highlighted by Martins and Terblanche (2014) and Ravasi and Schultz (2006).

However, the extremely high coefficient observed between transformational leadership and organizational culture ( $\beta = 0.993$ ) warrants careful interpretation. Such a strong relationship may indicate potential issues such as multicollinearity or conceptual overlap between constructs. This observation aligns with methodological concerns raised in previous research, which emphasize the importance of distinguishing closely related organizational variables to

avoid inflated estimates (Hatch & Cunliffe, 2013). Nevertheless, the overall reliability and validity of the measurement model suggest that the findings remain robust, although further investigation is recommended.

Overall, this study contributes to the existing body of knowledge by providing an integrated model that explains how transformational leadership influences teachers' innovative behavior through both psychological and organizational mechanisms. Unlike prior studies that often examine these variables in isolation, this research highlights the combined and sequential mediating roles of psychological empowerment and organizational culture, particularly within the context of higher vocational education. This contextual focus is important, as vocational institutions face unique challenges that require continuous innovation in teaching practices and curriculum development (Yuan & Zhao, 2017).

In conclusion, the findings underscore the critical role of transformational leadership in fostering innovation in educational settings. By enhancing psychological empowerment and cultivating a supportive organizational culture, leaders can create an environment that encourages teachers to generate, implement, and diffuse innovative ideas. These results not only reinforce existing theories but also provide new insights into the mechanisms through which leadership influences innovation in higher vocational colleges.

## Conclusion

1. The study identified key components of transformational leadership, teachers' innovative behaviours, psychological empowerment, and organizational culture in Henan's vocational colleges. Transformational leadership includes idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. Teachers' innovative behaviours involve idea generation, implementation, and diffusion. Psychological empowerment covers meaningfulness, competence, autonomy, and impact. Organizational culture consists of clan, adhocracy, hierarchy, and market types. These components are interrelated and essential for fostering teachers' innovation.

2. The study found that transformational leadership positively influences teachers' innovative behaviour through psychological empowerment and organizational culture in higher vocational colleges. Statistical analysis confirmed strong relationships ( $p < .001$ ) with high mean

scores (3.83–4.06). CFA results indicated an excellent model fit (Chi/df = 1.10, RMSEA = 0.0172, CFI = 0.998, TLI = 0.998), supporting the model's validity.

3. The study used Structural Equation Modeling (SEM) to test the impact of transformational leadership (TFL) on teachers' innovative behaviors (TIB), psychological empowerment (PEM), and organizational commitment (OZC) in Henan's vocational colleges. High intercorrelations among constructs suggested potential multicollinearity, but the measurement model showed strong reliability and validity. Hypothesis testing revealed significant direct effects: TFL influences OZC ( $\beta = 0.993$ ), PEM ( $\beta = 0.704$ ), and TIB ( $\beta = 0.370$ ). Indirect effects showed that TFL affects TIB through OZC ( $\beta = 0.617$ ) and PEM ( $\beta = 0.260$ ). Organizational commitment emerged as the most crucial mediator, highlighting its central role in fostering teacher innovation.

### Research Suggestions

Research Suggestions for practical application based on the findings of this study, several practical recommendations can be made to enhance the effectiveness of transformational leadership in fostering teachers' innovative behaviors in vocational colleges.

1. Fostering a Transformational Leadership Culture, Vocational colleges should invest in training and developing leaders who possess the core components of transformational leadership, including idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. Leaders should be encouraged to provide support and intellectual challenges to their teachers, fostering an environment where creativity and innovation are valued and nurtured.

2. Empowerment Programs for Teachers, given that psychological empowerment plays a crucial mediating role in enhancing teachers' innovative behavior, colleges should implement empowerment initiatives. These could include providing teachers with more autonomy in decision-making, ensuring that they feel their work is meaningful, and recognizing their impact on the institution and students. Empowerment training can help teachers understand how to apply their creativity and engage in innovative teaching methods, ultimately benefiting the learning environment.



3. Enhancing Organizational Culture, Colleges should focus on creating a supportive organizational culture that promotes collaboration, risk-taking, and experimentation. An adhocracy culture, characterized by flexibility, innovation, and a willingness to take risks, could be particularly effective in promoting teacher innovation. Creating such a culture requires leadership that actively supports these values and structures that reward creativity and risk-taking.

4. Promoting Organizational Commitment Leaders should also focus on enhancing teachers' organizational commitment, as it plays a central role in fostering innovation. Initiatives to improve organizational commitment could include professional development opportunities, recognition programs, and team-building activities that align with the overall goals of the institution, fostering a shared sense of purpose and belonging.

### Recommendations for Future Research

1. Exploring Longitudinal Effects: While this study provides valuable insights into the relationships between transformational leadership, psychological empowerment, organizational culture, and innovative behaviors, future research could explore the longitudinal effects of transformational leadership. Examining how the impact of transformational leadership evolves over time would provide a deeper understanding of how sustained leadership efforts influence long-term innovation in educational settings.

2. Investigating the Role of Context. Future studies should consider the role of context in shaping the effectiveness of transformational leadership and its influence on innovation. Research could explore how factors such as the size of the institution, regional educational policies, and socioeconomic factors may moderate or mediate the relationship between leadership and innovation.

3. Cross-Cultural Comparisons. Given the global nature of educational systems, cross-cultural studies could be valuable in understanding how the dynamics of transformational leadership, empowerment, and organizational culture play out in different cultural settings. This would provide insights into whether the findings of this study hold true in other countries with different educational systems and cultural contexts.



4. Investigating the Role of Other Leadership Styles. While transformational leadership has proven effective in fostering innovation, future research could explore the impact of other leadership styles, such as transactional or servant leadership, on teachers' innovative behaviors. Comparing the effectiveness of different leadership styles could offer a more comprehensive view of how leadership influences innovation in educational institutions.

5. Exploring Teacher Well-Being and Innovation. Future research could explore the relationship between teachers' well-being and their innovative behaviors. Understanding how factors such as stress, job satisfaction, and work-life balance influence teachers' ability to innovate would provide a more holistic view of the factors contributing to innovation in education.

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