

อิทธิพลของภาวะผู้นำการเปลี่ยนแปลงต่อพฤติกรรม
นวัตกรรมของพนักงานในธุรกิจบริการความรู้เข้มข้น:
ความคล่องตัวในการเรียนรู้เป็นตัวแปรคั่นกลาง

The impact of transformational leadership on
employee innovative behaviour in knowledge-
intensive business services: Employee learning
agility as a mediator

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บทคัดย่อ

ในยุคเศรษฐกิจที่ขับเคลื่อนด้วยความรู้ ธุรกิจบริการความรู้เข้มข้นมีบทบาทสำคัญในการส่งเสริมนวัตกรรมและความสามารถในการแข่งขันขององค์กร การวิจัยนี้ศึกษาอิทธิพลของภาวะผู้นำการเปลี่ยนแปลงที่มีต่อพฤติกรรมนวัตกรรมของพนักงานในธุรกิจบริการความรู้เข้มข้นในมณฑลยูนนาน โดยศึกษาความคล่องตัวในการเรียนรู้เป็นตัวแปรคั่นกลาง การวิจัยนี้ใช้วิธีการวิจัยเชิงปริมาณ เก็บข้อมูลจากแบบสอบถามโครงสร้างจากพนักงาน 588 คน ในธุรกิจบริการความรู้เข้มข้นในมณฑล

ยูนนาน ใช้โมเดลสมการโครงสร้างเพื่อทดสอบสมมติฐานการวิจัย ผลการวิจัยพบว่า ภาวะผู้นำการเปลี่ยนแปลงส่งผลตรงเชิงบวกต่อพฤติกรรมนวัตกรรมของพนักงานอย่างมีนัยสำคัญ ($\beta = 0.314$, $p < 0.001$) ความคล่องตัวในการเรียนรู้ของพนักงานเป็นตัวแปรคั่นกลางระหว่างภาวะผู้นำการเปลี่ยนแปลงกับพฤติกรรมนวัตกรรมของพนักงานอย่างมีนัยสำคัญ ($\beta = 0.154$, $p < 0.001$) ข้อค้นพบเหล่านี้นำเสนอกรอบการอธิบายใหม่ที่ชี้ให้เห็นว่า ภาวะผู้นำการเปลี่ยนแปลงสามารถส่งเสริมพฤติกรรมนวัตกรรมของพนักงาน ผ่านการเสริมสร้างความมั่นใจในความสามารถในการเรียนรู้และการปรับตัวภายใต้สภาพแวดล้อมที่ไม่แน่นอน ในทางปฏิบัติ ผลการศึกษานี้เสนอแนวทางแก่ผู้บริหารในการพัฒนาวัฒนธรรมองค์กรที่ขับเคลื่อนด้วยนวัตกรรม โดยใช้พฤติกรรมภาวะผู้นำการเปลี่ยนแปลง การส่งเสริมการฝึกอบรมพนักงาน การพัฒนากลไกที่ช่วยยกระดับความคล่องตัวในการเรียนรู้ของบุคลากร

คำสำคัญ: ภาวะผู้นำการเปลี่ยนแปลง พฤติกรรมนวัตกรรมของพนักงาน ความคล่องตัวในการเรียนรู้ของพนักงาน ธุรกิจบริการความรู้เข้มข้น โมเดลสมการโครงสร้าง

Abstract

In the era of knowledge economy, Knowledge-Intensive Business Services (KIBS) play a critical role in driving innovation and organizational competitiveness. This research study investigates the influence of transformational leadership on employee innovative behaviour in Yunnan's KIBS sector, focusing specifically on exploring the mediating role of employee learning agility. A quantitative research design was employed using a structured questionnaire survey administered to 588 employees from representative KIBS enterprises in Yunnan Province. Structural Equation Modeling was conducted to test the proposed hypotheses. The results reveal that transformational leadership has a significant positive direct effect on employee innovative behaviour ($\beta = 0.314$, $p < 0.001$). Moreover, employee learning agility plays significant mediating roles between transformational leadership and employee innovative behaviour ($\beta = 0.154$, $p < 0.001$). These findings offer a new explanatory framework illustrating how transformational leaders foster innovation by enhancing employees' confidence in their capacity to learn and adapt in uncertain environments. Practically, the findings provide valuable insights for enterprise managers to cultivate

innovation-driven organizational cultures by adopting transformational leadership behaviours, strengthening employee training, and developing programs that enhance learning agility.

Keywords: Transformational Leadership, Employee Innovative Behaviour, Employee Learning Agility, Knowledge-Intensive Business Services (KIBS), Structural Equation Modeling

Introduction

Nowadays, innovation has emerged as a pivotal factor for organizations to maintain competitive advantage and achieve sustainable growth (Najafi-Tavani et al., 2018). Innovation activities are particularly crucial for knowledge-intensive firms, serving as the driving force and source of their competitive advantage and enhanced innovation performance in an intensely competitive environment (Fischer et al., 2022; Zhou et al., 2022). They are mainly concerned with providing knowledge-intensive support for the business processes of other organizations, and are highly active in innovation and have relatively high labor productivity (Song et al., 2024).

Prior research shows that leadership style is the key element to stimulate employees 'innovative behaviour, and the close relationship between transformational leaders and employees' innovative behaviour has also attracted wide attention from the academic community (Amankwaa et al., 2019; Khan et al., 2020). Transformational leadership is proved to prompt followers innovative behaviour, even impact them to go beyond in-role work responsibilities and demonstrate extra-role behaviours (Amankwaa et al., 2019; Khan et al., 2020). Consequently, learning agility is posited to have a significant positive impact on creativity, innovation and problem-solving abilities (De Meuse, 2017).

This research suggests that learning agility is a crucial factor that enables employees to effectively convert leadership guidance into innovative actions. We seek to investigate the potential role of learning agility as mediating variables in the relationship between transformational leadership and innovative behaviour in the KIBS context. The research attempts to answer the following questions: What role does employee learning agility play in the relationship between transformational leadership and innovative behaviour? And to what degree does transformational leadership contribute to employee innovative behaviour by simultaneously influencing employee learning agility?

This study utilizes the established research model to analyze the internal relationships among the three variables, providing theoretical support and a decision-making basis for KIBS administrators. It helps them enhance leadership training and development programs, identify the need for a specific leadership style, and increase their behavioural flexibility. This enables them to exhibit an appropriate leadership style to enhance employee learning agility, thereby augmenting employee innovative behaviour.

Research Objectives

1. To clarify the influence of transformational leadership on employee innovative behaviour.
2. To identify the relationships between transformational leadership, employee learning agility and employee innovative behaviour.
3. To explore the mediating role and transmission mechanism of employee learning agility.

Review of the Literature

Transformational Leadership

Transformational leadership (TL) is an influential leadership theory characterized by leaders who inspire and motivate followers to achieve exceptional outcomes by transcending their self-interests. Grounded in the seminal work of Bass (1999), this style is typically manifested through behaviours such as articulating an inspiring vision, providing intellectual stimulation, and offering individualized support. Contemporary research continues to affirm its significant positive influence on a range of desirable employee outcomes, including enhanced innovation, commitment, and performance (Afsar et al., 2014). Fundamentally, transformational leaders act as catalysts for positive change by elevating followers' motivation and aligning their values with organizational goals, thereby fostering a culture of continuous improvement and excellence (Bass, 1999).

Employee Innovative Behaviour

Employee innovative behaviour (EIB) is a multi-stage process encompassing the generation, promotion, and realization of new ideas for beneficial outcomes, extending beyond mere idea creation (Scott & Bruce, 1994). This multifaceted concept, recognized as the critical behavioural foundation for organizational innovation and success, includes all individual actions aimed at realizing beneficial novelty (Janssen, 2000). Key antecedents of EIB include personality, job design, organizational climate, resources (Muchiri et al., 2020), supervisor-subordinate relationships (Xerri & Brunetto, 2013), and psychological safety (Cao & Zhang, 2020). As such, understanding the drivers of EIB is essential for fostering a competitive and sustainable organization.

Learning Agility

Learning agility, the ability to learn from experience and apply it in new situations (Lombardo & Eichinger, 2000), is a developable meta-competency refined to include dimensions like feedback responsiveness (De Meuse, 2017). It is a vital predictor of leadership potential and a cornerstone of talent management due to its role in organizational adaptability (Nayak & Malik, 2024).

Employees with high learning agility drive innovation and enhance organizational competitiveness (Nayak & Malik, 2024). It also acts as a key mechanism through which

supportive organizational practices improve outcomes like reduced turnover (Tripathi et al., 2020). As a developable competency (De Meuse, 2017) identifying managerial factors that cultivate it is crucial.

Transformational Leadership and Employee Innovative Behaviour

Empirical studies consistently show that transformational leadership has a strong positive effect on employees' innovative work behaviour (Mittal & Dhar, 2015). Through idealized influence, inspirational motivation, and intellectual stimulation, transformational leaders encourage followers to question existing assumptions and explore novel ideas (Nasir et al., 2022). Research across various sectors confirms that transformational leadership fosters a supportive and empowering environment that enhances employees' intrinsic motivation and willingness to innovate (Muchiri et al., 2020). Meta-analytic evidence further supports this relationship, showing that transformational leadership exerts stronger effects on innovation outcomes than transactional or laissez-faire leadership styles. However, some scholars suggest a curvilinear pattern—while moderate levels of transformational leadership stimulate creativity, excessively high levels may restrict autonomy and reduce innovation (Bednall et al., 2018). Beyond direct effects, transformational leadership also influences innovative work behaviour through various psychological and contextual mechanisms. Transformational leaders enhance psychological empowerment, trust, and knowledge sharing, which create favorable conditions for innovation (Al-Mansoori & Koç, 2019; Tipu et al., 2012). The following hypothesis is proposed:

H₁ : Transformational leadership is positively related to employee innovative behaviour.

Transformational Leadership and Employee Learning Agility

Transformational leaders, through vision sharing, intellectual stimulation, and individualized consideration, cultivate a growth-oriented environment that promotes continuous learning and adaptability (Karakoy & Oncer, 2023). By encouraging experimentation, openness to new ideas, and learning from failure, transformational leaders enhance employees' capacity to acquire and apply new knowledge effectively. Empirical studies confirm that transformational leadership fosters learning agility by promoting continuous learning and a growth-oriented mindset, enabling employees to embrace change and apply new knowledge (AlNuaimi et al., 2022). Transformational leadership enhances employee agility in digital transformation and small enterprises (Chang & Octoyuda, 2024), and strategically contributes to organizational agility by fostering flexibility and a responsive learning culture (Ly, 2024). The following hypothesis is proposed:

H_2 : Transformational leadership is positively related to employee learning agility.

Employee Learning Agility and Employee Innovative Behaviour

Learning agility has been identified as a crucial factor in promoting innovative work behaviour. Employees with high learning agility tend to embrace challenges, experiment with new ideas, and develop creative solutions to complex problems (Chung, 2024; Putri & Suharti, 2021). Empirical research shows that learning agility enhances innovation by fostering openness, adaptability, and proactive learning. When supported by a strong learning culture and organizational encouragement, agile employees are better equipped to navigate change and leverage new knowledge for creative outcomes (Karakoy & Oncer, 2023). The following hypothesis is proposed:

H_3 : Employee learning agility has a significant positive effect on employee innovative behaviour.

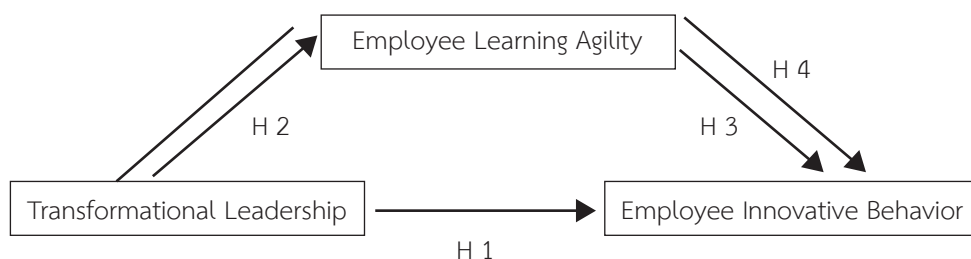
Transformational Leadership, Employee Learning Agility and Employee Innovative Behaviour

A growing body of research underscores the pivotal role of learning agility as a psychological and behavioural mechanism that translates leadership influence into employee innovation. The mediating mechanism operates through several pathways. Leaders who focus on solving critical issues, stimulate innovation precisely by developing employees' learning agility. This aligns with Sofyan and Kristiana (2023) earlier finding that transformational leaders foster environments conducive to innovation, but employees' ability to actually generate and implement novel ideas depends significantly on their learning agility. Similarly, Karakoy and Oncer (2023) establish that various leadership styles enhance innovation precisely through their positive effect on employees' adaptive learning capabilities. The following hypothesis is proposed:

H_4 : Employee learning agility mediates the positive relationship between transformational leadership and employee innovative behaviour.

Figure 1

Conceptual Framework



Research Methods

This quantitative study investigates the relationships among transformational leadership (TL), employee learning agility (ELA), and employee innovative behaviour (EIB) within knowledge-intensive service enterprises in Yunnan Province, China. Data were collected via a structured questionnaire from 30 organizations using established measurement scales. The data analysis employs a two-stage approach, using SPSS for preliminary descriptive and reliability analyses, followed by Structural Equation Modeling (SEM) as the primary framework to test the hypothesized direct and indirect effects among the constructs.

Measurement

This study employed established scales to measure the core constructs. Transformational leadership was assessed using the Multifactor Leadership Questionnaire (MLQ–Form 5X) (Bass et al., 2003). Employee innovative behaviour was measured (Janssen, 2000) 9-item unidimensional scale. Learning agility was evaluated using a 25-item instrument (Gravett & Caldwell, 2016), which examines the four dimensions of learning agility conceptualized (Lombardo & Eichinger, 2000).

A six-point Likert scale was used for all constructs to mitigate central tendency bias common in collectivist cultures, thereby enhancing data discriminant validity for measuring nuanced psychological constructs in the SEM analysis.

Sampling Procedure

This study utilized a stratified cluster sampling method to survey knowledge-intensive business service (KIBS) organizations in Yunnan Province, China, covering six OECD-classified sectors. The sample comprised 30 organizations, primarily selected from Kunming ($\geq 60\%$) and supplemented by emerging economic zones, with proportional distribution across sectors and regions. The sample size was determined using the structural equation modeling guidelines (Hair et al., 2006). Finally, 588 respondents answered the survey.

Data Analysis

The data analysis ensured robustness through established metrics: reliability was confirmed with Cronbach's alpha (all $>.70$), while convergent and discriminant validity were verified via CFA (loadings $>.60$, CR $>.70$, AVE $>.50$) and the Fornell-Larcker criterion/HTMT (Hair et al., 2006). Structural Equation Modeling was used as the primary framework, with mediation tested via bootstrapping to examine the path through learning agility. Correlation analysis preliminarily confirmed significant relationships among key constructs.

Results and Discussion

Descriptive Analysis

Table 1 presents the descriptive statistics for the main research variables. The mean scores for all variables are relatively high, indicating generally positive perceptions among participants. ELA recorded the highest mean value ($M = 4.723$, $SD = 0.533$), suggesting that

employees demonstrated a strong tendency to learn, adapt, and apply new knowledge in their work contexts. EIB also showed a high mean ($M = 4.454$, $SD = 0.612$), reflecting frequent engagement in innovative and creative behaviours at work. TL reported a slightly lower but still high mean ($M = 4.381$, $SD = 0.659$), indicating that respondents generally perceived their leaders as transformational—motivating, inspiring, and supportive of change.

The relatively low standard deviations across all variables (ranging from 0.533 to 0.659) suggest a consistent pattern of responses, implying that participants' perceptions of TL, ELA, and EIB were broadly similar.

Table 1

Descriptive Statistical Analysis of Research Variables

Variable	Number of Items	Mean	Std. Deviation
Transformational leadership (TL)	21	4.381	0.659
Employee innovative behaviour (EIB)	9	4.454	0.612
Employee learning agility (ELA)	25	4.723	0.533

Reliability

Based on the analysis of the formal questionnaire data, all variables in this study demonstrated satisfactory reliability as shown in Table 2. Specifically, the Cronbach's alpha coefficients were .923 for TL, .937 for ELA, and .823 for EIB, with an overall Cronbach's alpha of .950 for all variables combined. The Cronbach's alpha values for each dimension within the variables exceeded the accepted reliability threshold of .700, with the majority surpassing .800. These results indicate that all scales possessed strong internal consistency.

Construct Validity

Construct validity was assessed by examining factor loadings, Average Variance Extracted (AVE), and Composite Reliability (CR). According to Hair et al. (2006), factor loadings above 0.70 indicate satisfactory indicator reliability. In this study, all standardized loadings exceeded 0.63, with most above 0.70, confirming that each item adequately represented its corresponding construct.

As shown in Table 2, all constructs demonstrated acceptable reliability and convergent validity. The AVE values exceeded 0.50 and CR values were above 0.70, confirming good construct validity. Specifically, TL (AVE = 0.554, CR = 0.862), ELA (AVE = 0.555, CR = 0.886), and EIB (AVE = 0.541, CR = 0.779) all met the recommended thresholds.

Table 2

Construct Validity and Reliability

Construct	AVE	CR	Cronbach's alpha
Transformational leadership (TL)	0.554	0.862	.923
Employee innovative behaviour (EIB)	0.555	0.886	.937
Employee learning agility (ELA)	0.541	0.779	.823

Discriminant validity

Discriminant validity, which ensures constructs are conceptually distinct (Fornell & Larcker, 1981) was confirmed by comparing the square root of the Average Variance Extracted (AVE) for each construct with its correlations to others. As shown in Table 3, the square roots of the AVEs for all TL, ELA, and EIB dimensions exceeded their inter-construct correlations, demonstrating adequate distinctiveness and satisfactory discriminant validity.

Table 3

Discriminant Validity Analysis Results

Dimension	Number of Item	Discriminant Validity										
		II.C	IM	IS	IC	MA	PA	CA	RA	IG	IP	IR
II.C	7	.743										
IM	5	.483**	.748									
IS	5	.538**	.499**	.727								
IC	4	.502**	.459**	.494**	.760							
MA	6	.413**	.268**	.300**	.282**	.740						
PA	6	.328**	.207**	.224**	.187**	.535**	.745					
CA	6	.343**	.226**	.281**	.234**	.586**	.472**	.746				
RA	7	.297**	.166**	.218**	.204**	.605**	.465**	.475**	.749			
IG	3	.402**	.273**	.330**	.266**	.470**	.340**	.379**	.395**	.727		
IP	3	.333**	.249**	.271**	.199**	.285**	.291**	.347**	.248**	.449**	.744	
IR	3	.274**	.292**	.27***	.201**	.247**	.241**	.270**	.235**	.344**	.405**	.735

Note. **p < 0.01

Structural Model

As shown in Table 4, the results show that TL significantly predicts EIB ($H_1: \beta = .314, p < .001$), ELA ($H_2: \beta = .529, p < .001$). In turn, ELA ($H_3: \beta = .291, p < .001$) significantly enhance EIB. The indirect effect of TL on EIB through ELA was estimated at .154, with a 95% confidence interval of (.188, .373), which also excludes zero. These results suggest that ELA partially mediates the relationship between TL and EIB, all 4 Hypotheses are supported.

Table 4

Route Analysis

Direct Effect	Route	Std.Estimate	S.E.	C.R.	p-Value
	TLEIB	.314***	.043	4.862	.001
	TLELA	.529***	.047	9.052	.001
	ELAEIB	.291***	.059	4.022	.001
Indirect Effect	Route	Std.Estimate	95% Confidence Interval (Lower)	95% Confidence Interval (Upper)	p-Value
	TLELAEIB	.154***	.188	.373	.001

Note. *** $p < 0.001$

Table 5

Research Hypothesis Verification Results

Research Hypotheses	Results
H_1 : Transformational leadership is positively related to employee innovative behaviour.	Supported
H_2 : Transformational leadership is positively related to employee learning agility.	Supported
H_3 : Employee learning agility has a significant positive effect on employee innovative behaviour.	Supported
H_4 : Employee learning agility mediates the positive relationship between transformational leadership and employee innovative behaviour.	Supported

Discussion

The findings confirm that transformational leadership exerts a significant positive influence on employee innovative behaviour, supporting Hypothesis 1, consistent with prior research emphasizing its role in inspiring creativity and promoting change (Mittal & Dhar, 2015; Wang & Howell, 2010). This relationship operates through multiple reinforcing mechanisms. By articulating a compelling vision, providing intellectual stimulation, and fostering psychological empowerment, transformational leaders encourage employees to challenge assumptions and explore novel solutions (Nasir et al., 2022). Furthermore, transformational leaders model innovative behaviour through idealized influence, inspire persistence through motivational support, and cultivate creativity through individualized consideration and intellectual stimulation (Tipu et al., 2012). These behaviours foster trust, intrinsic motivation, and a collaborative climate conducive to innovation (Al-Mansoori & Koç, 2019). Although some research suggests diminishing returns at extreme levels of transformational leadership (Bednall et al., 2018), the present study supports a consistently positive relationship.

Simultaneously, the results demonstrate that transformational leadership positively influences employee learning agility, supporting Hypothesis 2. Consistent with previous research, transformational leadership enhances employees' ability to learn, adapt, and apply new knowledge effectively (AlNuaimi et al., 2022; Karakoy & Oncer, 2023). Through vision sharing, intellectual stimulation, and individualized consideration, transformational leaders foster a growth-oriented environment that encourages experimentation, openness, and continuous learning. These results align with the broader literature showing that transformational leadership facilitates adaptive and agile behaviour by promoting a learning culture and developmental mindset. Studies in both traditional and digital contexts confirm that such leadership helps employees embrace change and acquire the agility needed in dynamic environments (Chang & Octoyuda, 2024; Ly, 2024). In sum, this study reinforces the theoretical and empirical consensus that transformational leadership is a key driver of employee learning agility.

Consistent with prior empirical evidence, the findings confirm that employee learning agility positively influences innovative behaviour, supporting Hypothesis 3. Employees with higher learning agility are more likely to embrace challenges, experiment with new ideas, and apply acquired knowledge creatively to their work (Jo & Hong, 2022; Putri & Suharti, 2021). Agile employees continuously seek feedback, learn from experience, and develop flexible thinking patterns that enable them to generate and implement novel solutions (Karakoy & Oncer, 2023). Learning agility fosters openness, adaptability, and proactive learning—qualities that drive innovative outcomes. When combined with supportive leadership and organizational learning cultures, learning agility further strengthens employees' capacity for innovation.

The results also indicate that learning agility partially mediates the relationship between transformational leadership and employee innovative behaviour, supporting Hypothesis 4. This finding aligns with previous research showing that learning agility serves as a psychological and behavioural bridge between leadership influence and innovation. Transformational leaders promote intellectual stimulation, experimentation, and continuous learning, which in turn strengthen employees' adaptive learning capabilities and innovation readiness (Karakoy & Oncer, 2023; Sofyan & Kristiana, 2023). Learning-agile employees translate leadership inspiration into practical innovation by reframing problems, acquiring new skills, and applying lessons from experience (Putri & Suharti, 2021).

In sum, this study extends these findings to the Knowledge-Intensive Business Services (KIBS) context, underscoring that learning and adaptability are key pathways through which transformational leadership enhances innovative behaviour. In sum, learning agility emerges as a vital mechanism that channels transformational leadership into tangible, innovative employee actions. Innovation in KIBS is not driven by leadership alone, but by leadership-enabled learning capability

Contributions

This study theoretically contributes by identifying employee learning agility as a key mechanism through which transformational leadership fosters employee innovative behaviour, thereby extending TL theory into knowledge-intensive (KIBS) contexts. Practically, it suggests that organizations can more effectively drive innovation by simultaneously developing transformational leaders and cultivating a learning-oriented culture that enhances employees' adaptive and problem-solving capabilities.

Limitations and Future Research

This study elucidates how transformational leadership fosters employee innovative behaviour through employee learning agility, yet it has limitations. Its cross-sectional design and self-reported data limit causal inferences, calling for future longitudinal or multi-source research. The quantitative approach could be complemented by qualitative methods to uncover deeper contextual mechanisms. Furthermore, generalizability may be constrained by the sample from China's KIBS sector, suggesting a need for future studies across diverse industries and cultures, and to explore potential moderators like psychological safety or learning climate.

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