Journal of Intellect Education (IEJ), Volume 4, No.6
(November-December 2025) ISSN: 2822-0218 (Online)

Factors Affecting Teachers' Educational Innovation Competency in Private Universities in Shaanxi Province: Effect of Salient Model

Guo Yuanda[1*], Sukhum Moonmuang[2], Sataporn Pruettikul [3]

1 *Faculty of Education, Bangkokthonburi University, Thailand*
2 *Faculty of Education, Bangkokthonburi University, Thailand*
3 *Faculty of Education, Bangkokthonburi University, Thailand*
* *Corresponding author. E-mail:* dr.thiwat@gmail.com

Abstract

The objectives of this research were: (1) To examine the influence of knowledge, beliefs, and attitudes on educational innovation competency; (2) To investigate the impact of knowledge, beliefs, and attitudes on salient factors in educational innovation competency contexts; and (3) To determine whether salient factors mediate the relationship between knowledge, beliefs, attitudes, and educational innovation competency. The research methodology was quantitative research. It selected 486 teachers from 10 private universities in Shaanxi as subjects. Using a multistage sampling method, data were collected through IOC tools and five-point scale questionnaires. The questionnaire response rate was 100% and all were valid. Data analysis was conducted using descriptive statistics, CFA, and SEM to examine how knowledge, beliefs, and attitudes affect educational innovation competency among private universities in Shaanxi Province. The research findings revealed that: (1) Knowledge and belief factors did not have a significant direct effect on educational innovation competency, while attitude factors showed a marginally significant direct effect, suggesting limited direct influence of these personal factors on innovation competency; (2) Knowledge, belief, and attitude factors all had significant direct effects on salient factors, indicating that these underlying variables strongly shape the contextual elements relevant to educational innovation; and (3) Salient factors had a substantial and significant direct effect on educational innovation competency and significantly mediated the relationships between knowledge, belief, and attitude factors and educational innovation competency, highlighting their central role in linking individual dispositions with innovation capacity.

Keywords: Educational Innovation Competency, Salient Factors, Knowledge, Beliefs, Attitudes

Received: 2025-10-30; Revised: 2025-12-14; Accepted: 2505-12-15 **ISSN: 2822-0218 (Online)**

Introduction

Educational innovation competency is a cornerstone of China's pursuit of high-quality education, with universities serving as pivotal platforms for cultivating talent and advancing teaching reforms. (JianFeng, Worapongpat, 2024).National strategies such as Education Modernization 2035 and global agendas like the OECD's Education 2030 framework call for integrating information technology, fostering creativity, and developing 21st-century skills (Ministry of Education, 2017; OECD, 2018). In Shaanxi Province, regional initiatives to strengthen private higher education highlight the need to align institutional development with broader innovation and equity goals (Zhang, 2020).

However, significant challenges hinder progress in private undergraduate universities. While these institutions benefit from flexible governance and closer industry ties, they often struggle with resource constraints, uneven faculty development, and high turnover. (Makjod, al. et., 2025). The growing proportion of younger faculty members, particularly post-90s scholars, brings new energy yet also demands modernized management approaches to sustain motivation and innovation (Chen & Zheng, 2021).

Research consistently affirms that enhancing teachers' educational innovation competency improves teaching quality, institutional competitiveness, and student outcomes (Fullan, 2007; Guskey, 2000). Key elements such as creativity, adaptability, and technological proficiency enable educators to integrate digital tools, design inclusive curricula, and adopt student-centered pedagogies aligned with global trends (Fadel et al., 2015; Koehler & Mishra, 2009). Yet empirical studies examining these factors in the context of private universities in Shaanxi remain limited, despite the province's strategic role in national initiatives like the "Belt and Road" (Zhu & Zhang, 2018).

This study addresses this gap by investigating the determinants of educational innovation competency among teachers in Shaanxi's private universities. By providing context-specific evidence, it aims to inform leadership strategies, strengthen institutional capacity, and advance regional contributions to China's broader educational modernization agenda.

Questions

1. Do knowledge, beliefs, and attitudes impact educational innovation competency?
2. Do knowledge, beliefs, and attitudes influence the salient factors?
3. Do salient factors mediate the relationship between knowledge, beliefs, attitudes, and educational innovation competency?

Objectives

1. To examine the impact of knowledge, beliefs, and attitudes on educational innovation competency.
2. To investigate the influence of knowledge, beliefs, and attitudes on salient factors in educational innovation competency contexts.
3. To determine whether salient factors mediate the relationship between knowledge, beliefs, attitudes, and educational innovation competency.

Hypothesis

H1: Knowledge contributes to educational innovation competency.

H2: Beliefs contribute to educational innovation competency.

H3: Attitudes contribute to educational innovation competency.

H4: Knowledge has influence on salient factors.

H5: Beliefs have influence on salient factors.

H6: Attitudes have influence on salient factors.

H7: Salient factors have influence on educational innovation competency.

H8: Salient factors mediate the relationship between knowledge and educational innovation competency.

H9: Salient factors mediate the relationship between beliefs and educational innovation competency.

H10: Salient factors mediate the relationship between attitudes and educational innovation competency.

Literature Reviews

Under China's innovation-driven development strategy, teachers' educational innovation competency has become a critical driver for improving teaching quality and fostering talent development in higher education. (Pintong, Worapongpat, 2024). In Shaanxi Province, private universities are characterized by flexibility and responsiveness but face persistent challenges, including limited funding, faculty shortages, and insufficient institutional support (Li & Wang, 2023). These structural constraints hinder their ability to cultivate a strong culture of educational innovation, making it essential to identify key factors that influence teachers' competence in this domain. (Worapongpat, 2025a).

Educational innovation competency refers to teachers' capacity to integrate new pedagogical approaches, technologies, and organizational practices into teaching and curriculum design to improve learning outcomes (Zhao & Chen, 2022). This competency encompasses not only knowledge and skills but also beliefs, attitudes, and salient psychological factors that shape teachers' motivation and behavior (Ajzen, 2020). Recent research emphasizes that beyond technical expertise, educators' willingness to innovate is strongly affected by intrinsic and extrinsic drivers, including institutional culture, leadership style, and personal self-efficacy (Zhang et al., 2021).

The salient model posits that individuals' behavior is guided by their most accessible beliefs and attitudes in a given context (Fazio, 1990). Applied to education, salient factors such as perceived organizational support, recognition, and role identity serve as psychological mechanisms that directly influence teachers' engagement in innovative practices (Sun & Liu, 2021). In private universities, where material resources are often scarce, leveraging these psychological drivers is particularly crucial. (Worapongpat, 2025b) Teachers who perceive high institutional recognition and alignment between personal and organizational goals are more likely to experiment with new teaching methods, integrate technology, and engage in collaborative curriculum reform. (Worapongpat, Arunyakanon, 2025).

Empirical studies also demonstrate that teachers' innovation competency is shaped by three broad categories of factors: knowledge-related, belief-related, and attitude-related (Wang & Xu, 2022). Salient factors mediate the influence of these dimensions by enhancing teachers' psychological readiness and reinforcing a sense of purpose. (Worapongpat, Kangpheng, 2025). For example, professional development programs are more effective when paired with recognition mechanisms that validate teachers' contributions and align with their self-concept as innovators (Liu et al., 2020).

In Shaanxi's private universities, a pattern of "localized excellence amid systemic constraints" has emerged. While individual teachers or departments have demonstrated strong innovation outcomes, the broader institutional ecosystem often lacks stability and cohesion (Li & Wang, 2023). This underscores the need for a conceptual framework that integrates both cognitive and psychological factors to explain variations in educational innovation competency. The present study builds on the salient model to analyze how knowledge, beliefs, and attitudes interact with institutional recognition,

support structures, and role identity to shape teachers' innovative teaching behaviors. (Worapongpat, al. yet.,2023).

This research contributes to theory and practice in several ways. (Worapongpat, al. et., 2023). Theoretically, it extends the salient model to educational innovation by identifying specific psychological mechanisms relevant to teachers in resource-constrained environments. (Worapongpat, Viphoouparakhot, 2024). Practically, it provides actionable insights for administrators and policymakers seeking to strengthen faculty innovation capacity. Interventions such as targeted training, supportive leadership, and recognition systems can foster not only teachers' technical competence but also their willingness to take risks and engage in pedagogical experimentation. (Xie, Ma, 2021). Ultimately, enhancing educational innovation competency in private universities will improve teaching quality, strengthen institutional competitiveness, and contribute to regional development goals. (Zhao, Liu, 2020).

Methodology

This quantitative study employed a cross-sectional design to examine the influence of knowledge, beliefs, and attitudes on educational innovation competency among teachers in private undergraduate universities in Shaanxi Province, China. The target population was faculty members across 10 private universities, from which a multistage stratified sample of 486 participants was drawn to ensure representativeness. Data collection instruments included structured questionnaires based on literature-derived indicators, validated for content through the Index of Item-Objective Congruence (IOC) and refined by five expert professors. The questionnaires employed a five-point Likert scale and achieved a 100% valid response rate. Core variables—Knowledge Factors (KF), Belief Factors (BF), Attitude Factors (AF), Salient Factors (SF), and Educational Innovation Competency (EIC)—were operationalized through these validated items. Quantitative data underwent descriptive statistical analysis (percentages, means, standard deviations, skewness, kurtosis) and inferential analysis using Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) to examine direct and indirect effects, including mediating pathways of salient factors. This methodological approach ensured analytical rigor through expert validation, representative sampling, and the integration of psychometrically sound statistical techniques, providing robust evidence on how personal and contextual factors shape educational innovation competency within Shaanxi's private higher education context.

Results

1. The research findings on the influence of knowledge, beliefs, and attitudes on educational innovation competency.

Survey data from teachers confirmed that all latent constructs—Knowledge Factors (KF_F), Belief Factors (BF_F), Attitude Factors (AF_F), Salient Factors (SF_F), and Educational Innovation Competency (EIC_F)—were reliably measured by their respective observed indicators. Standardized factor loadings ranged from 0.59 to 0.79 and were all statistically significant ($p < .001$), with 95% confidence intervals well above the commonly accepted thresholds, establishing satisfactory indicator reliability and construct validity (Table 4.7).

Confirmatory factor analysis validated the five-construct measurement model, with acceptable psychometric properties supporting its use for structural modeling. The structural model demonstrated good fit to the empirical data ($\chi^2 = 137$, $df = 125$, $p = 0.223$), indicating

that the hypothesized relationships were consistent with observations. Hypothesis testing results showed:

H1: Knowledge factors did not exert a significant direct effect on educational innovation competency.

H2: Belief factors did not exert a significant direct effect on educational innovation competency.

H3: Attitude factors exerted a marginally significant direct effect on educational innovation competency.

These findings indicate that, while knowledge and belief factors alone were insufficient to directly enhance teachers' innovation competency, positive attitudes toward innovation played a more immediate and influential role. The validated measurement model and significant path results together confirm that attitudes are a key driver in strengthening teachers' educational innovation competency.

Table 1 Standardized factor loadings and measurement properties for the latent constructs

				95% Confidence Intervals				
Latent	**Observed**	**Estimate**	**SE**	**Lower**	**Upper**	**β**	**z**	**p**
KF_F	P	1.000	0.000	1.000	1.000	0.750		
	T	0.806	0.078	0.652	0.959	0.629	10.27	<.001
	C	1.068	0.090	0.891	1.244	0.752	11.85	<.001
BF_F	RA	1.000	0.000	1.000	1.000	0.710		
	CM	1.015	0.084	0.850	1.179	0.704	12.11	<.001
	CX	1.090	0.083	0.927	1.254	0.735	13.08	<.001
	TR	1.172	0.088	1.000	1.345	0.792	13.31	<.001
	OB	1.017	0.083	0.855	1.180	0.701	12.27	<.001
AF_F	PU	1.000	0.000	1.000	1.000	0.704		
	PEU	1.016	0.077	0.865	1.168	0.724	13.16	<.001
	BI	1.017	0.086	0.848	1.185	0.696	11.85	<.001
EIC_F	TK	1.000	0.000	1.000	1.000	0.737		
	PK	0.921	0.059	0.806	1.036	0.690	15.65	<.001
	CK	0.973	0.056	0.863	1.082	0.726	17.42	<.001
	TPACK	1.133	0.063	1.010	1.256	0.774	18.08	<.001
SF_F	AB	1.000	0.000	1.000	1.000	0.608		
	SN	1.123	0.106	0.916	1.330	0.650	10.62	<.001
	PBC	0.971	0.112	0.751	1.191	0.593	8.64	<.001

Standardized factor loadings for all latent constructs exceeded the acceptable threshold of 0.60, indicating satisfactory indicator reliability and convergent validity (Hair et al., 2019; Fornell & Larcker, 1981). All factor loadings were significant ($p < .001$), with extreme loadings observed for KF_F→C ($\beta = 0.752$, $z = 11.85$), BF_F→TR ($\beta = 0.792$, $z = 13.31$), and EIC_F→TPACK ($\beta = 0.774$, $z = 18.08$), confirming the robustness of the measurement model (Anderson & Gerbing, 1988).

2. The research findings on the impact of knowledge, beliefs, and attitudes on salient factors in educational innovation competency contexts.

Hypothesis testing further showed that,

H4: Knowledge factors had a significant direct effect on salient factors.

H5: Belief factors had a significant direct effect on salient factors.

H6: Attitude factors had a significant direct effect on salient factors.

The results demonstrated that knowledge, beliefs, and attitudes all had significant direct effects on salient factors. This indicates that these three internal factors meaningfully contribute to shaping the key contextual variables (salient factors) that support or hinder teachers' development of innovation competency.

The Structural Equation Model (SEM) was employed to assess the hypothesized relationships among the study variables. As a comprehensive statistical approach that combines factor analysis and path analysis, SEM enables the simultaneous examination of latent constructs and their relationships. Figure 1 and Table 2 present the model specification and the model fit evaluation, respectively.

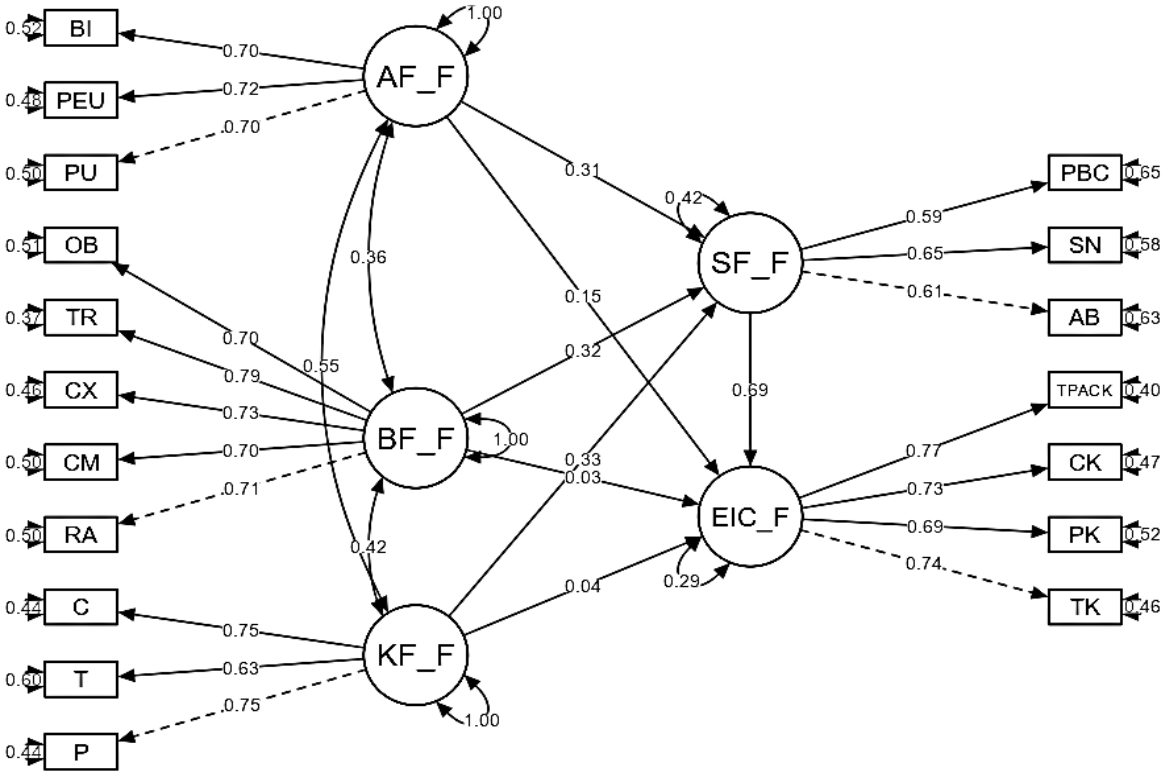

Figure 1 Structural Equation Model

The structural equation model examined key factors influencing teachers' Educational Innovation Competency (EIC_F) in Shaanxi's private universities. Knowledge Factors (KF_F)—measured by pedagogical (λ=0.42), technological (λ=0.60), and content knowledge (λ=0.44)—had weak direct effects on EIC_F (β=0.04) but significantly influenced Beliefs Factors (BF_F) (β=0.42). BF_F, integrating innovation adoption attributes (e.g., relative advantage, λ=0.50), was the strongest predictor of EIC_F (β=0.69) and mediated the effects of Attitudes Factors (AF_F) (β=0.55) and KF_F. AF_F (e.g., perceived usefulness, λ=0.50) indirectly impacted EIC_F via BF_F and Salient Factors (SF_F) (β=0.42), with a modest direct effect (β=0.15). SF_F—composed of social-cognitive elements (e.g., perceived behavioral

control, λ=0.65)—further directly predicted EIC_F (β=0.29). The model highlighted beliefs and social salience as central drivers, while knowledge and attitudes played indirect roles in shaping innovation competency.

Table 2 Model Fit Evaluation of SEM

	Model
Comparative Fit Index (CFI)	0.996
Tucker-Lewis Index (TLI)	0.995
Bentler-Bonett Non-normed Fit Index (NNFI)	0.995
Relative Noncentrality Index (RNI)	0.996
Bentler-Bonett Normed Fit Index (NFI)	0.958
Bollen's Relative Fit Index (RFI)	0.949
Bollen's Incremental Fit Index (IFI)	0.996
Parsimony Normed Fit Index (PNFI)	0.783

It could be seen from Table 2 that the model demonstrated excellent incremental fit. The CFI and RNI both reached 0.996, while the TLI and NNFI were 0.995, all exceeding the 0.95 threshold and indicating superior fit. The NFI (0.958) and RFI (0.949) also reflected strong model performance, and the IFI matched the CFI and RNI at 0.996, reinforcing the model's robustness. Although the PNFI was lower at 0.783, it remained acceptable for complex models. Overall, the results suggested that the measurement model achieved a high level of fit while maintaining appropriate parsimony.

To further validate the hypotheses of this study, structural equation modeling (SEM) was used to estimate and test the path relationships among variables. Path coefficients, significance levels, and standard errors were examined to evaluate the strength and significance of the effects.

Table 3 Direct Effects Result

Hypothesis	**IV**		**DV**	**Estimate**	**SE**	**β**	**z**	**p**
H1	KF_F	→	EIC_F	0.0398	0.0792	0.0413	0.503	0.615
H2	BF_F	→	EIC_F	0.0345	0.0781	0.0321	0.442	0.658
H3	AF_F	→	EIC_F	0.1529	0.0809	0.1518	1.889	0.059
H4	KF_F	→	SF_F	0.2665	0.0706	0.333	3.776	<.001
H5	BF_F	→	SF_F	0.2832	0.0668	0.3171	4.241	<.001
H6	AF_F	→	SF_F	0.2628	0.0722	0.3141	3.640	<.001
H7	SF_F	→	EIC_F	0.8338	0.1625	0.6928	5.130	<.001

The structural model provided strong empirical support for H4, H5, H6, and H7, highlighting the critical mediating role of salient factors in educational innovation competency. However, direct effects of knowledge, beliefs, and attitudes on educational innovation competency (H1, H2, H3) were weak or nonsignificant. This suggests that salient factors play a more influential role in shaping educational innovation competency among teachers in private universities in Shaanxi province.

3. The research findings on whether salient factors mediate the relationship between knowledge, beliefs, attitudes, and educational innovation competency.

The results supported the mediating role of salient factors,

H7: Salient factors had a strong and significant direct effect on educational innovation competency.

H8: Salient factors significantly mediated the relationship between knowledge factors and educational innovation competency.

H9: Salient factors significantly mediated the relationship between belief factors and educational innovation competency.

H10: Salient factors significantly mediated the relationship between attitude factors and educational innovation competency.

The analysis confirmed that salient factors significantly mediated the relationships between knowledge, beliefs, and attitudes and educational innovation competency. In particular, salient factors had a strong direct effect on innovation competency, acting as critical mechanisms through which internal factors influence teachers' innovative practices.

To explore the indirect effects among variables and validate the mediating role of salient factors, structural equation modeling (SEM) was conducted. Indirect path coefficients, significance levels, and standard errors were analyzed to assess the strength and significance of these mediation effects. The results are summarized in Table 4.

Table 4 Indirect Effects Result

Hypothesis	Description	Estimate	SE	β	z	p
H8	KF_F → SF_F → EIC_F	0.222	0.072	0.231	3.097	0.002
H9	BF_F → SF_F → EIC_F	0.236	0.069	0.220	3.444	<.001
H10	AF_F→ SF_F → EIC_F	0.219	0.073	0.218	3.018	0.003

The results provided strong empirical support for the mediating role of Salient Factors, indicating that the effects of teachers' knowledge, beliefs, and attitudes on their educational innovation competency were largely transmitted through their motivational intentions and perceived control over behavior.

Discussion

1. Regarding Objective 1 (Influence of Knowledge, Beliefs, and Attitudes on Educational Innovation Competency).The analysis of Objective 1 showed that the model fit the data well ($\chi^2 = 137$, df = 125, p = 0.223), supporting the hypothesized relationships as noted by Kline (2016). Results revealed that knowledge and belief factors did not have significant direct effects on teachers' educational innovation competency, whereas attitude factors demonstrated a marginally significant direct influence, according to Ajzen (1991) and Davis (1989). This suggests that teachers' attitudes toward innovation play a more immediate and meaningful role in shaping their innovation competency compared to knowledge and beliefs, as discussed by Mishra and Koehler (2006).

2. Regarding Objective 2 (Impact of Knowledge, Beliefs, and Attitudes on Salient Factors). The analysis of Objective 2 revealed that knowledge, beliefs, and attitudes all had significant direct effects on salient factors related to educational innovation competency, as reported by Ajzen (1991), Bandura (1986), and Mishra and Koehler (2006). These findings suggest that these internal factors play crucial roles in shaping the key contextual variables that influence teachers' development of innovation competency, highlighting their importance in

fostering an environment conducive to educational innovation, as emphasized by Rogers (2003).

3. Regarding Objective 3 (Mediation Relationship between Knowledge, Beliefs, Attitudes, and Educational Innovation Competency). The analysis of Objective 3 confirmed the significant mediating role of salient factors in the relationships between knowledge, beliefs, attitudes, and educational innovation competency, as discussed by Baron and Kenny (1986) and Hayes (2018). Salient factors demonstrated a substantial direct effect on educational innovation competency, serving as crucial mechanisms through which these internal factors influence teachers' innovative practices. This highlights the importance of considering contextual mediators to fully understand how knowledge, beliefs, and attitudes contribute to innovation competency in educational settings, as emphasized by Rogers (2003) and Mishra and Koehler (2006).

Originality

From the study titled:"Factors Affecting Teachers' Educational Innovation Competency in Private Universities in Shaanxi Province: Effect of Salient Model,"The research revealed that teachers' Educational Innovation Competency (EIC) is not directly shaped by personal factors such as Knowledge, Beliefs, and Attitudes alone. Instead, these personal factors influence Salient Factors, which in turn mediate their effects on innovation competency. Thus, Salient Factors act as a key bridge connecting teachers' internal dispositions with their actual capacity for educational innovation.

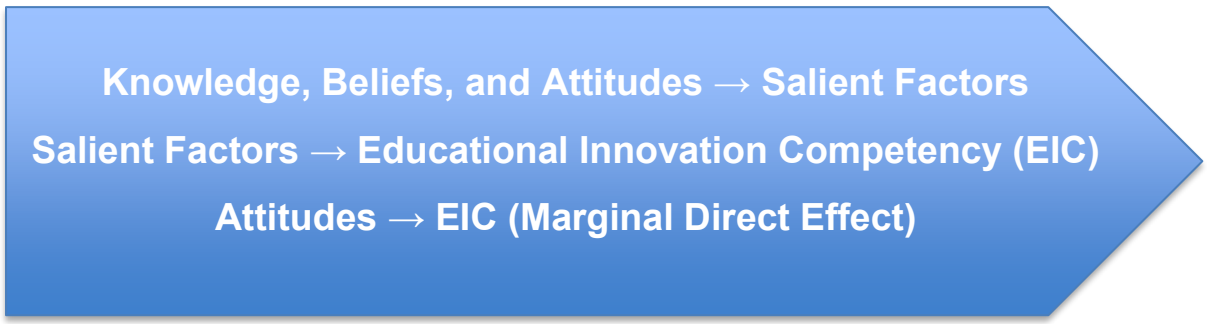

Figure 2 Originality from research

Knowledge, Beliefs, and Attitudes → Salient Factors All three personal variables have significant direct effects on Salient Factors.This suggests that teachers' cognitive and affective dispositions strongly shape the contextual and motivational elements that support innovation.Salient Factors → Educational Innovation Competency (EIC)Salient Factors exert a strong and significant direct effect on EIC.They also mediate the relationships between Knowledge, Beliefs, and Attitudes and EIC, indicating their central role as a transmission mechanism.Attitudes → EIC (Marginal Direct Effect)Among the personal factors, only Attitudes showed a marginally significant direct effect on EIC, implying a limited but noteworthy influence.

Recommendations

This study offered targeted recommendations based on the significant indirect effects of knowledge, beliefs, and attitudes on educational innovation competency through salient

psychological factors, with a focus on private universities in Shaanxi Province. There were recommendations for applying the research results and for future research as follows:

Recommendation for Policy Formulation

It was advised that universities adopt integrated approaches that connect knowledge and psychological readiness, institutionalize mechanisms such as innovation labs and reflective programs, foster collaboration to activate teachers' knowledge, promote psychologically safe environments, and encourage cross-sectoral policies that support an equitable innovation culture across private and public institutions.

Recommendation for Practical Application

Recommendations emphasized recruiting for psychological dispositions alongside expertise, redesigning professional development to build internal readiness, implementing reflective appraisal systems, creating peer support networks, and providing incentives recognizing psychological growth toward innovation—strategies aimed at enhancing innovation capacity amid Shaanxi's competitive academic environment.

Recommendations for Future Research

The study highlighted the need to further explore psychological and contextual mechanisms, proposing longitudinal and mixed-methods studies on motivation, cognitive-affective pathways, institutional trust, cross-cultural mediation by salient factors, and the role of artificial intelligence in shaping teacher innovation readiness. These recommendations provide a comprehensive framework to advance educational innovation in Shaanxi's private universities, integrating policy, practice, and scholarly inquiry. Researchers may explore the following directions:

(1) Unpacking the Mechanisms of Psychological Readiness: A Longitudinal Study of Motivation and Innovation Among University Teachers.

(2) From Beliefs to Practice: A Mixed-Methods Exploration of the Cognitive-Affective Pathways to Educational Innovation.

(3) The Role of Institutional Trust and Psychological Safety in Activating Teachers' Innovation Intentions.

(4) A Cross-Cultural SEM Study on the Mediating Role of Salient Factors in Teacher Innovation Competency.

(5) Artificial Intelligence as a Catalyst or Barrier? Understanding How AI Tools Impact Teacher Beliefs, Attitudes, and Innovation Readiness.

References

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179–211.

Ajzen, I. (2020). The theory of planned behavior: Frequently asked questions. *Human Behavior and Emerging Technologies, 2*(4), 314–324.

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin, 13*(3), 411–423.

Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Prentice Hall.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. Journal of Personality and Social Psychology, 51(6), 1173–1182.

Chen, H., & Zheng, Y. (2021). Private higher education development in China. *Higher Education Research, 42*(3), 45–58.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319–340.

Fadel, C., Bialik, M., & Trilling, B. (2015). *Four-dimensional education: The competencies learners need to succeed.* Center for Curriculum Redesign.

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2009). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 41*(4), 1149–1160.

Fazio, R. H. (1990). Multiple processes by which attitudes guide behavior: The MODE model as an integrative framework. *Advances in Experimental Social Psychology*, 23, 75–109.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39–50.

Fullan, M. (2007). The new meaning of educational *change (4th ed.). Teachers College Press.*

Guskey, T. R. (2000). Evaluating professional development. Corwin Press.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Cengage Learning.

Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd ed.). Guilford Press.

Kline, R. B. (2016). *Principles and practice of structural equation modeling* (4th ed.). Guilford Press.

Koehler, M. J., & Mishra, P. (2009). What is technological pedagogical content knowledge? *Contemporary Issues in Technology and Teacher Education, 9*(1), 60–70.

Li, Y., & Wang, J. (2023). Challenges and development strategies for private universities in Western China. Higher Education Research, 44(3), 56–64.

Liu, Q., Zhang, L., & Huang, Y. (2020). Recognition and innovation in higher education: A psychological perspective. *Teaching and Teacher Education*, 95, 103138.

Ministry of Education. (2017). *Education modernization 2035*. Beijing: Author.

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record, 108*(6), 1017–1054.

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record, 108*(6), 1017–1054.

OECD. (2018). *The future of education and skills: Education 2030*. OECD Publishing.

Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press.

Sun, W., & Liu, H. (2021). Organizational support, role identity, and teacher innovation: Evidence from Chinese universities. *Asia Pacific Education Review, 22*(2), 289–302.

Wang, S., & Xu, F. (2022). Factors influencing teachers' innovative teaching practices in higher education. *Journal of Educational Research, 115*(4), 453–467.

Zhang, Q. (2020). Education and the Belt and Road Initiative. *China Education Review, 12*(4), 22–30.

Zhang, X., Chen, L., & Zhao, J. (2021). Leadership and faculty innovation in Chinese universities: A multi-level analysis. *Studies in Higher Education, 46*(6), 1085–1101.

Zhao, J., & Chen, H. (2022). Educational innovation competency: A conceptual framework for higher education. *Teaching Innovations, 35*(2), 11–19.

Zhu, Y., & Zhang, L. (2018). Education inequality and innovation capacity. *Asian Education Studies, 6*(2), 15–28.

JianFeng, L., & Worapongpat, N. (2024). Rural head teachers' leadership in local education curriculum under the perspective of educational modernization in Xi'an Province. *Journal of Interdisciplinary Social Development, 2*(3), 1–25. https://so12.tci-thaijo.org/index.php/JISDIADP/article/view/1140

Makjod, S., Worapongpat, N., Kangpheng, S., & Bhasabutr, P. (2025). Academic administration of the opportunity expansion school under the Prachinburi Primary Educational Service Area Office 1. *Journal of Education and Learning Reviews, 2*(5), 85–94. https://so19.tci-thaijo.org/index.php/JELS/article/view/963

Pintong, A., & Worapongpat, N. (2024). The relationship between transformational leadership of educational institution administrators and being a learning organization: The school expands educational opportunities under the jurisdiction of Nakhon Pathom Primary Educational Service Area Office. *Art and Science Great Mekong Subregion Research Journal, Khon Kaen University [OAS Journal], 32*(2), 52–67. https://li01.tci-thaijo.org/index.php/oasjournal/article/view/262673

Worapongpat, N. (2025a). Leadership in the decision-making behavior of educational institution administrators at Guangdong Open University. *Journal of Management, Administration, and Sustainable Development, 3*(1), 51–68. https://so15.tci-thaijo.org/index.php/jamsd/article/view/1477

Worapongpat, N. (2025b). Integrating interdisciplinary workshop design to advance life skills and leadership among graduate students at private universities in Thailand. Liberal *Arts and Social Studies International Journal (LAASSIJ), 1*(2), 55–71. https://so18.tci-thaijo.org/index.php/laassij/article/view/1133

Worapongpat, N., & Arunyakanon, P. (2025). Transformational leadership and change management competency in response to sudden disruptions among administrators of Jiangling Town Central High School, DaZhou City. *Journal of Education and Learning Reviews, 2*(2), 47–58. https://doi.org/10.60027/jelr.2025.913

Worapongpat, N., & Kangpheng, S. (2025). Transformational leadership skills for executives in the digital age, China Polytechnic College. *Journal of Education and Learning Reviews, 2*(5), 27–44. https://doi.org/10.60027/jelr.2025.931

Worapongpat, N., Heebnga, N., Hadtapranit, P., Rueangsri, P., & Sirijon, S. (2023). A development of lesson plan by teaching the cooperative learning group STAD technique: Writing program by Python language in computing science subject of secondary 2 education students at Wat-Aiyikaram School. *Journal of MBU Humanities, 15*(2), 1–13. https://so06.tci-thaijo.org/index.php/JoMbuHu/article/view/261743

Worapongpat, N., Waranya, T., Sarawut, T., Chotivungso, P. P. B., & Saikham, S. (2023). The creative leadership and school administration of school administrators under the Office of Pathom Dvaravati. *Rattanakosin Journal of Social Sciences and Humanities, 5*(3), 25–40. https://so05.tci-thaijo.org/index.php/RJSH/article/view/264138

Worapongpat, N., & Viphoouparakhot, V. (2024). Design and development of integrated training systems to enhance leadership skills in educational administration and principles of leadership in the relationship of educational institutions with communities in Ratchaburi Province for education of graduate students at private universities in the Bangkok area. *Journal of Management, Administration, and Sustainable Development, 2*(3), 577–590. https://so15.tci-thaijo.org/index.php/jamsd/article/view/837

Xie, H. X., & Ma, J. T. (2021). Research on the moral legitimacy and exemplary behavior of private university leaders in transitional China. *Journal of Higher Education Development, 42*(3), 45–52.

Zhao, X., & Liu, Y. (2020). Vision-driven leadership in private university governance. *Research on Higher Education in China,* 12, 45–68.