



Influencing Factors of Faculty Educational Innovation Ability in Private Universities in Liaoning Province: The Mediating Role of Perceived Contextual Factors

Ntapat Woarapongpat

Center for Knowledge Transfer, Technology, Community Innovation, Entrepreneurship, Tourism, and Education, Eastern Institute of Technology Suvannabhumi (EITS), Thailand

E-mail: dr.thiwat@gmail.com RCID ID: <https://orcid.org/0009-0008-3071-5249>

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Abstract

Background and Aim: Educational innovation ability has become a critical determinant of teaching quality and institutional competitiveness in private higher education, particularly within the context of China's regional revitalization strategies. Private universities in Liaoning Province face distinctive structural and institutional constraints that shape faculty members' capacity for educational innovation. This study aimed to examine the influencing factors of faculty members' educational innovation ability, with particular emphasis on the mediating role of a Dominant Contextual Model, defined as faculty members' perceived dominant contextual conditions, operationalized through attitudes toward innovative behavior, subjective norms, and perceived behavioral control.

Materials and Methods: A quantitative research design was employed. Data were collected from 486 faculty members across 10 private universities in Liaoning Province using a structured five-point Likert-scale questionnaire. Confirmatory factor analysis (CFA) and structural equation modeling (SEM) were used to examine direct effects, indirect effects, and mediation relationships among faculty knowledge, beliefs, attitudes, dominant contextual factors, and educational innovation ability.

Results: The SEM results indicated that faculty knowledge and beliefs did not exert significant direct effects on educational innovation ability, whereas attitudes showed a marginal direct effect. In contrast, dominant contextual factors demonstrated a strong and significant direct effect on educational innovation ability. Knowledge, beliefs, and attitudes all had significant positive effects on dominant contextual factors. Mediation analysis further revealed that dominant contextual factors significantly mediated the relationships between individual factors (knowledge, beliefs, and attitudes) and educational innovation ability, indicating that individual attributes influenced innovation ability primarily through their effects on perceived contextual conditions.

Conclusion: The findings demonstrate that educational innovation ability in private universities is largely context-driven. Faculty members' individual knowledge, beliefs, and attitudes become influential only when translated through dominant contextual perceptions that enable, legitimize, and support innovation. The Dominant Contextual Model provides a theoretically grounded and empirically supported framework for understanding how perceived contextual mechanisms shape educational innovation, offering important implications for future research and institutional policy in higher education.

Keywords: Educational Innovation Ability; Dominant Model; Knowledge; Beliefs; Attitudes; Private Universities; Liaoning Province

Introduction

Educational innovation has become a central driver of higher education reform in the context of global knowledge economies and rapid technological transformation. (Chao & Worapongpat, 2024). Universities are increasingly expected not only to transmit existing knowledge but also to cultivate creativity, adaptability, and problem-solving competencies among students (Zhu et al, 2024). In the context of educational transformation, faculty members' educational innovation ability is essential for improving instructional effectiveness, promoting curriculum innovation, and enhancing institutional competitiveness (Chao & Worapongpat, 2024; Huang et al., 2024). In China, national strategies such as Education Modernization 2035 explicitly emphasize innovation-oriented teaching, digital transformation, and continuous professional development of university faculty as key mechanisms for achieving high-quality and sustainable higher education.

Private universities constitute an important and rapidly expanding segment of China's higher education system, particularly in economically transitioning regions such as Liaoning Province (Zhou et. al., 2022). Under the Chinese regulatory framework, private universities are market-oriented higher





education institutions that operate independently from direct government fiscal allocation and rely heavily on tuition revenue and institutional self-financing. As part of China's traditional industrial base in Northeast China, Liaoning Province has experienced prolonged economic restructuring, population outflow, and intensified competition for educational and human resources (Fishbein, Ajzen, 2010). Within this context, private universities often face constrained financial capacity, heavier teaching workloads, and relatively high faculty mobility compared with public universities, creating a distinctive institutional environment for educational innovation.

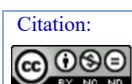
These contextual characteristics have important implications for faculty work conditions. Limited institutional funding may restrict access to teaching innovation grants and digital infrastructure, while market-oriented governance models often emphasize performance evaluation systems closely tied to student enrollment outcomes and teaching workload intensity. (Worapongpat, 2025c). At the same time, faculty mobility in private universities tends to be higher due to contractual employment arrangements and competitive labor markets, which can weaken long-term investment in pedagogical innovation. Such conditions suggest that educational innovation ability among faculty members in private universities is shaped not only by individual competence but also by how institutional contexts are perceived, interpreted, and enacted in daily teaching practice.

Existing research widely acknowledges that individual factors such as teachers' knowledge, beliefs, and attitudes provide essential foundations for educational innovation (Guoqing et. al., 2024). Knowledge offers the cognitive basis for adopting new pedagogical approaches, beliefs influence educators' perceptions of teaching and learning, and attitudes shape their willingness to experiment with innovative practices (Worapongpat, 2025b). However, accumulating empirical evidence indicates that these individual attributes do not automatically translate into innovation ability, particularly in organizational environments where performance appraisal systems, leadership practices, workload arrangements, and perceived institutional support exert a dominant influence on faculty behavior.

From an institutional and sociocultural perspective, educational innovation does not occur in isolation but is embedded within a broader contextual framework that shapes opportunities, constraints, and behavioral expectations (Huang et. al., 2024). In private universities, especially those operating under economic and policy pressure, contextual mechanisms such as evaluation criteria, administrative control, organizational norms, and perceived autonomy play a crucial role in determining whether faculty members can transform innovative intentions into sustained teaching innovation (Worapongpat, 2025a). These mechanisms function as dominant contextual conditions that mediate the enactment of individual knowledge, beliefs, and attitudes in practice.

Despite the growing literature on educational innovation, empirical studies that systematically integrate individual characteristics and contextual factors within a single analytical framework remain limited, particularly in higher education settings undergoing rapid transformation in China (Huang et al., 2024). Prior research has often examined individual psychological variables or institutional policies in isolation, with limited attention to how contextual factors mediate the relationship between individual attributes and educational innovation ability (Worapongpat, 2024). Moreover, few studies have explicitly tested mediation mechanisms using structural equation modeling, leaving unanswered questions about why faculty members with adequate knowledge and positive attitudes toward innovation may still demonstrate limited innovation ability in practice.

In response to this gap, the present study investigates the influencing factors of faculty educational innovation ability in private universities in Liaoning Province through a dominant contextual model. Specifically, it examines the direct effects of faculty knowledge, beliefs, and attitudes on educational innovation ability, as well as the mediating role of dominant contextual factors understood as faculty members' perceived contextual conditions. By adopting a structural equation modeling approach, this study aims to provide empirical evidence on how individual and contextual factors interact to shape educational innovation ability. The findings are expected to contribute to theoretical discussions on context-mediated educational innovation, offer practical implications for faculty development and institutional governance, and support policy efforts to enhance the quality and sustainability of private higher education in Northeast China.





Objectives

1. To examine the positive direct effects of faculty members' knowledge, beliefs, and attitudes on their educational innovation ability in private universities in Liaoning Province.
2. To analyze the positive effects of faculty members' knowledge, beliefs, and attitudes on dominant contextual factors, conceptualized as faculty members' perceived contextual conditions—including perceived behavioral control, subjective norms, and attitudes toward innovative behavior—that shape educational innovation practices in private universities.
3. To investigate the mediating role of dominant contextual factors in the relationships between faculty members' knowledge, beliefs, and attitudes and their educational innovation ability, to determine whether individual attributes influence innovation ability primarily through perceived contextual mechanisms rather than through direct effects alone.

Literature review

Educational Innovation Ability of University Faculty

Educational innovation ability (EIA) refers to faculty members' perceived professional competence to integrate pedagogical, technological, and content knowledge in ways that support innovative teaching practices. (Kanjaporn, 2022). In the context of this study, EIA is conceptualized as a form of innovation-related competence rather than a direct measure of observable teaching behavior or institutional performance outcomes. This conceptualization aligns with self-reported survey measurement and structural equation modeling approaches, which capture faculty members' perceptions of their innovative capacity rather than externally evaluated teaching effectiveness.

Prior research emphasizes that educational innovation extends beyond the simple adoption of new technologies and involves the meaningful integration of instructional design, pedagogical strategies, and digital tools to enhance student learning (Klaesamut, 2019). In higher education, faculty members with strong innovation-related competence are more likely to redesign curricula, adopt student-centered pedagogies, and experiment with new instructional approaches. However, empirical evidence suggests that innovation competence varies substantially across institutional contexts, with faculty in private universities often facing more constraints than their counterparts in public institutions.

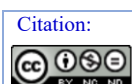
In this study, educational innovation ability is operationalized using indicators derived from the Technological Pedagogical Content Knowledge (TPACK) framework, which emphasizes the integration of technological, pedagogical, and content knowledge as a foundation for innovative teaching. Accordingly, EIA is treated as TPACK-based innovation competence, reflecting faculty members' perceived ability to design and implement innovative instructional practices. This operational definition avoids conflating innovation competence with actual behavioral frequency or student learning outcomes and provides conceptual consistency between theory and measurement.

Knowledge, Beliefs, and Attitudes as Individual Determinants

Faculty members' professional knowledge—including pedagogical, content, and technological competencies—serves as a critical foundation for instructional innovation and educational improvement. Such knowledge enables educators to adapt teaching strategies, integrate new technologies, and respond effectively to changing educational demands (Huang et al., 2024). Frameworks such as TPACK highlight that innovation emerges not from isolated knowledge domains but from their dynamic integration in teaching practice.

Beliefs, in the context of this study, refer not to general pedagogical philosophies but to faculty members' perceptions of the characteristics of educational innovation. These perceptions include the innovation's relative advantage, compatibility, complexity, trialability, and observability, which influence individuals' willingness to adopt and implement new practices. Derived from Diffusion of Innovation Theory, these dimensions reflect how educators evaluate innovation attributes rather than their general views on teaching and learning (Rogers, 2003). Conceptualizing beliefs in this way helps explain why faculty members may support innovation in principle yet hesitate to adopt it in practice when innovations are perceived as complex, risky, or incompatible with institutional expectations.

Attitudes represent faculty members' affective and evaluative orientations toward engaging in innovative teaching behavior, including their willingness to experiment and their motivation to invest





effort in instructional change. Drawing from technology acceptance and behavioral intention models, attitudes toward innovation are understood as proximal predictors of innovative engagement (Rogers, 2003). However, existing studies consistently demonstrate that positive attitudes alone are insufficient to sustain innovation in environments characterized by heavy workloads, rigid evaluation systems, or limited institutional support.

Dominant Contextual Factors in Private Universities

From an institutional and social psychological perspective, individual behavior is shaped not only by objective organizational structures but also by how these structures are perceived and interpreted by organizational members (Shi et. al., 2023). In private universities, contextual influences such as governance arrangements, performance evaluation systems, workload distribution, leadership practices, and resource availability create a dominant institutional environment that frames faculty members' teaching decisions.

In this study, dominant contextual factors are conceptualized as perceived dominant contextual conditions, reflecting faculty members' subjective appraisals of institutional norms, expectations, and constraints. These factors are operationalized using components derived from the Theory of Planned Behavior, namely, subjective norms, perceived behavioral control, and attitudes toward innovative behavior, which together capture how faculty perceive social pressure, autonomy, and legitimacy surrounding educational innovation.

Empirical research on private higher education in China indicates that faculty members often operate under strong administrative control, high teaching intensity, and evaluation systems that prioritize short-term performance indicators over long-term pedagogical development (Sriwised & Keesookpun, 2014). In economically transitioning regions such as Liaoning Province, these pressures may be intensified by financial constraints and competition for student enrollment. As a result, faculty innovation is frequently shaped less by individual capability and more by perceived institutional expectations and constraints.

By conceptualizing dominant contextual factors as perceived rather than purely objective conditions, this study acknowledges that institutional influence operates through faculty members' interpretations of their environment, which ultimately guide innovative behavior.

Mediating Role of Dominant Contextual Factors

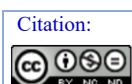
The mediating role of contextual factors has been widely discussed in social cognitive and behavioral theories. Social Cognitive Theory proposes that personal factors, environmental influences, and behavior interact through a process of reciprocal determinism, whereby environmental conditions influence how individual characteristics are translated into actions and behavioral outcomes (Bandura, 1989). Similarly, behavioral intention models emphasize that perceived norms and perceived control mediate the effects of individual dispositions on actual behavior.

In organizational contexts, perceived contextual conditions can either enable or suppress the expression of individual knowledge, beliefs, and attitudes. (Worapongpat et al., 2023). Supportive environments characterized by strong perceived autonomy, positive social norms, and manageable constraints are more likely to facilitate the translation of innovation-related competence into practice. Conversely, restrictive environments may neutralize individual innovation potential, even among highly capable and motivated faculty members.

Although prior studies have acknowledged the importance of contextual mediation, empirical research employing structural equation modeling to test these mechanisms in private universities remains limited, particularly in Northeast China. Existing studies have often examined individual or contextual factors in isolation, without explicitly modeling their interaction through mediation pathways. This gap highlights the need for a comprehensive analytical framework that integrates individual dispositions and perceived contextual mechanisms within a dominant contextual model of educational innovation.

Research Framework and Hypothesis Development

Based on the reviewed literature, this study proposes a dominant contextual model in which faculty members' knowledge, beliefs, and attitudes influence educational innovation ability both directly and indirectly through perceived dominant contextual factors. The model assumes that while



individual factors provide the foundational capacity for innovation, dominant contextual perceptions play a central role in shaping whether this capacity is realized as innovation competence in practice. Accordingly, the hypotheses of this study are developed to examine direct effects, contextual influences, and mediation relationships within the proposed structural equation model.

Conceptual Framework

Research Framework

This study is grounded in an integrated individual–contextual framework that explains faculty educational innovation ability through the interaction between individual dispositions and perceived dominant contextual conditions within private universities in Liaoning Province. Drawing on diffusion of innovation theory, technology acceptance perspectives, and the Theory of Planned Behavior (TPB), the proposed framework assumes that faculty members’ knowledge, beliefs, and attitudes provide the foundational capacity for innovation, while contextual influence operates primarily through faculty members’ perceptions of norms, control, and legitimacy surrounding innovative teaching.

In this framework, dominant contextual factors are explicitly conceptualized as perceived contextual mechanisms, operationalized through subjective norms, perceived behavioral control, and attitudes toward innovative behavior. These factors represent how institutional rules, evaluation systems, leadership expectations, and resource conditions are interpreted by faculty members, rather than objective institutional characteristics alone. Accordingly, the model posits that individual factors influence educational innovation ability both directly and indirectly through perceived dominant contextual factors.

Hypothesis Development

Based on the proposed Dominant Contextual Model, this study assumes that faculty members’ knowledge, beliefs, and attitudes may influence educational innovation ability both directly and indirectly through perceived dominant contextual factors. However, in private university contexts, perceived contextual conditions are expected to function as the primary mechanism through which individual factors are translated into educational innovation ability.

H1: Faculty members’ knowledge has a positive effect on perceived dominant contextual factors.

H2: Faculty members’ beliefs about educational innovation have a positive effect on perceived dominant contextual factors.

H3: Faculty members’ attitudes toward educational innovation have a positive effect on perceived dominant contextual factors.

H4: Perceived dominant contextual factors have a positive direct effect on educational innovation ability.

H5: Perceived dominant contextual factors mediate the relationship between faculty members’ knowledge and educational innovation ability.

H6: Perceived dominant contextual factors mediate the relationship between faculty members’ beliefs about educational innovation and educational innovation ability.

H7: Perceived dominant contextual factors mediate the relationship between faculty members’ attitudes toward educational innovation and educational innovation ability.

H8: Faculty members’ attitudes toward educational innovation have a positive direct effect on educational innovation ability.

H9: Faculty members’ knowledge has no significant direct effect on educational innovation ability when perceived dominant contextual factors are included in the model.

H10: Faculty members’ beliefs about educational innovation have no significant direct effect on educational innovation ability when perceived dominant contextual factors are included in the model.

Conceptual Framework

The conceptual framework of this study consists of three main components: individual determinants, perceived dominant contextual factors, and educational innovation ability.

Independent Variables: Individual Determinants

The independent variables include faculty members' knowledge, beliefs about educational innovation attributes, and attitudes toward educational innovation. These variables represent internal cognitive, evaluative, and motivational dispositions that form the foundation for innovation-related competence.

Mediating Variable: Perceived Dominant Contextual Factors

Dominant contextual factors are defined as faculty members' perceived dominant contextual conditions, operationalized through subjective norms, perceived behavioral control, and attitudes toward innovative behavior. These perceptions reflect how institutional governance, evaluation systems, leadership expectations, workload arrangements, and resource conditions are interpreted by faculty members and translated into perceived opportunities or constraints for innovation.

Dependent Variable: Educational Innovation Ability

Educational innovation ability is conceptualized as TPACK-based innovation competence, referring to faculty members' perceived ability to integrate pedagogical, technological, and content knowledge to design and implement innovative teaching practices.

Conceptual Framework

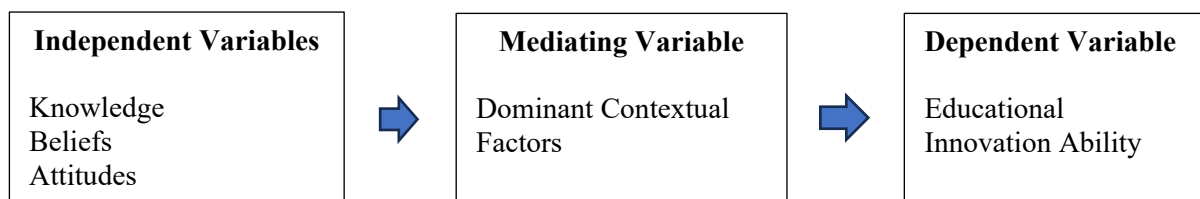


Figure 1: Conceptual Framework

Methodology

Research Design and Participants

This study employed a quantitative, cross-sectional survey design to examine the factors influencing faculty members' educational innovation ability in private universities in Liaoning Province, China, within a dominant contextual framework. The target population consisted of full-time faculty members employed at private undergraduate universities officially registered under the Chinese higher education system in Liaoning Province.

A multistage stratified sampling approach was adopted. In the first stage, ten private universities were selected to represent variation in institutional size and disciplinary focus within the province. In the second stage, faculty members were stratified by major academic discipline (e.g., humanities and social sciences, sciences and engineering, and applied disciplines), and participants were randomly invited within each stratum to ensure balanced representation. Inclusion criteria required participants to be full-time teaching staff with at least one year of teaching experience at their current institution, while part-time instructors and administrative staff without teaching responsibilities were excluded.

A total of 486 usable questionnaires were retained for analysis. Given the sample size and model complexity, this number exceeded commonly recommended thresholds for structural equation modeling, providing sufficient statistical power for CFA and SEM analyses.

Instrumentation

Data were collected using a structured self-administered questionnaire developed based on an extensive review of prior empirical studies and established theoretical frameworks. The instrument measured five latent constructs: Knowledge Factors (KF), Belief Factors (BF), Attitude Factors (AF), Dominant Contextual Factors (DCF), and Educational Innovation Ability (EIA).

Consistent with the conceptual framework, dominant contextual factors were operationalized as perceived dominant contextual conditions, capturing faculty members' perceptions of subjective norms, perceived behavioral control, and attitudes toward innovative behavior. These perceptions reflect how institutional governance, evaluation systems, leadership expectations, workload arrangements, and resource availability are interpreted by faculty members in their daily teaching practice.



All items were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Validity, Reliability, and Data Screening

Content validity was assessed using the Index of Item–Objective Congruence (IOC). Five experts in educational research and higher education management independently reviewed all questionnaire items. Items with IOC values below the commonly accepted threshold of 0.50 were revised or removed before data collection, ensuring adequate content alignment with the study objectives.

Before analysis, the dataset was screened for completeness, normality, and suitability for multivariate analysis. The term “100% valid response rate” refers to the fact that all retained questionnaires were fully completed after data screening; questionnaires with substantial missing data or patterned responses were excluded during the initial screening process. As the retained dataset contained no missing values, no imputation procedures were required.

To mitigate potential common method bias inherent in self-report surveys, several procedural remedies were applied, including anonymous participation, neutral item wording, and psychological separation of constructs within the questionnaire. In addition, Harman’s single-factor test was conducted as a diagnostic check during analysis.

Data Analysis Strategy

Data analysis was conducted in two main stages using statistical software appropriate for SEM analysis.

First, descriptive statistics including means, standard deviations, skewness, and kurtosis were computed to examine the distributional properties of observed variables and assess assumptions of normality.

Second, Confirmatory Factor Analysis (CFA) was performed to evaluate the measurement model. Reliability and validity were assessed using standardized factor loadings, Cronbach’s alpha coefficients, composite reliability (CR), average variance extracted (AVE), and discriminant validity indicators (Cronbach, 1990). These procedures ensured adequate internal consistency and construct validity before structural modeling.

Structural Equation Modeling (SEM) was then employed to test the hypothesized relationships among individual factors, perceived dominant contextual factors, and educational innovation ability, including both direct and indirect (mediating) effects.

Justification for Single-Level SEM

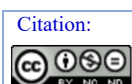
Although faculty members were nested within ten universities, this study employed a single-level SEM approach. This decision was based on the primary analytical focus on individual-level perceptions rather than institutional-level effects, as well as the limited number of clusters, which may constrain the stability of multilevel SEM estimation. To reduce potential bias associated with clustering, model fit and parameter estimates were interpreted conservatively, and standard SEM fit indices were jointly considered.

Future research is encouraged to employ multilevel or longitudinal designs to further examine cross-level dynamics and causal relationships between institutional conditions and faculty educational innovation ability.

Results

This chapter reports the empirical results of the study examining the factors influencing faculty members’ educational innovation ability in private universities in Liaoning Province. Structural Equation Modeling (SEM) was employed to test the proposed Dominant Contextual Model, which posits that faculty members’ knowledge, beliefs, and attitudes influence educational innovation ability both directly and indirectly through dominant contextual factors. The results are presented in five sections: measurement model validation, structural model fit, direct effects, effects on dominant contextual factors, and mediation analysis.

Measurement Model Validation





Confirmatory Factor Analysis (CFA) was conducted to assess the reliability and validity of the latent constructs, including Knowledge Factors (KF_F), Belief Factors (BF_F), Attitude Factors (AF_F), Dominant Contextual Factors (DCF_F), and Educational Innovation Ability (EIA_F). All constructs were measured using multiple observed indicators derived from established theoretical frameworks.

Table 1 Measurement Properties of Latent Constructs in the Dominant Contextual Model

Latent Construct	Observed Variable	Estimate	SE	β	z	p
Knowledge Factors (KF_F)	Pedagogical Knowledge (P)	1.000	—	0.630	—	—
	Technological Knowledge (T)	0.705	0.067	0.618	10.16	< .001
	Content Knowledge (C)	1.057	0.080	0.741	11.84	< .001
Belief Factors (BF_F)	Relative Advantage (RA)	1.000	—	0.710	—	—
	Compatibility (CM)	1.004	0.073	0.703	12.10	< .001
	Complexity (CX)	1.080	0.072	0.724	13.07	< .001
	Trialability (TR)	1.161	0.077	0.781	13.20	< .001
	Observability (OB)	1.006	0.072	0.701	12.16	< .001
Attitude Factors (AF_F)	Perceived Usefulness (PU)	1.000	—	0.703	—	—
	Perceived Ease of Use (PEU)	1.005	0.066	0.713	13.05	< .001
	Behavioral Intention (BI)	1.006	0.075	0.685	11.74	< .001
Educational Innovation Ability (EIA_F)	Technological Knowledge (TK)	1.000	—	0.726	—	—
	Pedagogical Knowledge (PK)	0.910	0.068	0.680	15.54	< .001
	Content Knowledge (CK)	0.962	0.045	0.715	17.31	< .001
	TPACK	1.122	0.052	0.763	18.07	< .001
Dominant Contextual Factors (DCF_F)	Attitude toward Behavior (AB)	1.000	—	0.607	—	—
	Subjective Norms (SN)	1.112	0.105	0.640	10.51	< .001
	Perceived Behavioral Control (PBC)	0.960	0.101	0.582	8.53	< .001

The standardized factor loadings ranged from 0.582 to 0.781, and all loadings were statistically significant at the $p < 0.001$ level (see Table 1). Although one indicator exhibited a loading slightly below the conventional 0.60 threshold, it remained within an acceptable range for established constructs and was retained due to its strong theoretical relevance and significant contribution to construct validity. Overall, the magnitude and significance of the factor loadings indicate satisfactory indicator reliability.

Structural Model Fit of the Dominant Contextual Model

The hypothesized Dominant Contextual Model was evaluated using SEM to examine the relationships among individual factors, dominant contextual factors, and educational innovation ability. The overall model demonstrated a very good fit to the empirical data.

Table 2 Model Fit Indices of the Dominant Contextual Model

Fit Index	Value	Recommended Threshold
χ^2 / df	126 / 114	< 3.00
CFI	0.985	≥ 0.95
TLI	0.984	≥ 0.95
IFI	0.985	≥ 0.95
NFI	0.947	≥ 0.90





Fit Index	Value	Recommended Threshold
RFI	0.938	≥ 0.90
PNFI	0.772	≥ 0.50

As shown in Table 2, the ratio of chi-square to degrees of freedom was within acceptable limits ($\chi^2/df = 126/114 < 3.00$). Incremental fit indices further confirmed model adequacy, with the Comparative Fit Index (CFI = 0.985), Tucker–Lewis Index (TLI = 0.984), and Incremental Fit Index (IFI = 0.985) all exceeding the recommended threshold of 0.95. The Normed Fit Index (NFI = 0.947) and Relative Fit Index (RFI = 0.938) also met acceptable criteria, while the Parsimony Normed Fit Index (PNFI = 0.772) indicated reasonable model parsimony given the model complexity.

Direct Effects of Knowledge, Beliefs, and Attitudes on Educational Innovation Ability

The direct effects of Knowledge Factors, Belief Factors, and Attitude Factors on Educational Innovation Ability were examined in accordance with the proposed framework (Table 3).

Table 3: Direct Effects among Internal Factors, Dominant Contextual Factors, and Educational Innovation Ability

Hypothesis	Path	Estimate	SE	β	z	p	Result
H1	KF_F $\rightarrow$ EIA_F	0.0387	0.0781	0.030	0.502	0.604	Not supported
H2	BF_F $\rightarrow$ EIA_F	0.0334	0.0770	0.021	0.431	0.667	Not supported
H3	AF_F $\rightarrow$ EIA_F	0.1518	0.0808	0.141	1.878	0.048	Marginal
H4	KF_F $\rightarrow$ DCF_F	0.2654	0.0705	0.322	3.765	< .001	Supported
H5	BF_F $\rightarrow$ DCF_F	0.2821	0.0657	0.306	4.230	< .001	Supported
H6	AF_F $\rightarrow$ DCF_F	0.2617	0.0711	0.303	3.630	< .001	Supported
H7	DCF_F $\rightarrow$ EIA_F	0.8327	0.1614	0.682	5.120	< .001	Supported

The results indicated that Knowledge Factors did not exert a significant direct effect on Educational Innovation Ability ($\beta = 0.030$, $p = 0.604$). Similarly, the direct effect of Belief Factors was not statistically significant ($\beta = 0.021$, $p = 0.667$). These findings suggest that faculty members' knowledge resources and innovation-related beliefs alone are insufficient to directly enhance educational innovation ability.

In contrast, Attitude Factors demonstrated a small but statistically significant direct effect on Educational Innovation Ability ($\beta = 0.141$, $p = 0.048$). This result indicates that favorable attitudes toward educational innovation, such as perceived usefulness, ease of use, and behavioral intention, may exert a limited immediate influence on innovative teaching ability, even in the absence of supportive contextual conditions.

Effects of Knowledge, Beliefs, and Attitudes on Dominant Contextual Factors

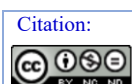
The model further examined the effects of individual factors on Dominant Contextual Factors, conceptualized as faculty members' perceived dominant contextual conditions, including perceived behavioral control, subjective norms, and attitudes toward innovative behavior.

Mediating Role of Dominant Contextual Factors

The mediating role of Dominant Contextual Factors in the relationships between individual factors and Educational Innovation Ability was examined through the analysis of indirect effects (Table 4).

Table 4: Indirect Effects of Internal Factors on Educational Innovation Ability through the Dominant Contextual Model

Hypothesis	Indirect Path	Estimate	SE	β	z	p	Result
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H8	KF_F → DCF_F → EIA_F	0.211	0.061	0.220	3.086	0.002	Supported
H9	BF_F → DCF_F → EIA_F	0.225	0.058	0.210	3.433	< .001	Supported
H10	AF_F → DCF_F → EIA_F	0.208	0.062	0.207	3.007	0.003	Supported

The results revealed that all indirect effects were statistically significant. Knowledge Factors exerted a significant indirect effect on Educational Innovation Ability through DCF ($\beta = 0.220$, $p = 0.002$). Similarly, Belief Factors demonstrated a significant indirect effect via DCF ($\beta = 0.210$, $p < 0.001$), and Attitude Factors also showed a significant indirect effect through DCF ($\beta = 0.207$, $p = 0.003$).

In addition, Dominant Contextual Factors had a strong and significant direct effect on Educational Innovation Ability ($\beta = 0.682$, $p < 0.001$), underscoring their central role in translating individual dispositions into innovative educational practices.

Taken together, these results indicate that faculty members' knowledge, beliefs, and attitudes influence educational innovation ability primarily through perceived dominant contextual mechanisms, rather than through direct pathways alone. Within the limitations of a cross-sectional design, the findings support a statistical mediation pattern in which perceived contextual norms, control, and support serve as the primary channels through which individual capacities are enacted.

Discussion

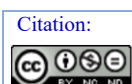
The first research objective was to study the direct effect of faculty members' knowledge, beliefs, and attitudes on educational innovation ability. The results showed that there were no significant direct effects for knowledge and beliefs, although attitudes had a tiny direct influence only. This finding indicates that faculty members' pedagogical, technological, and content understanding, and positive perceptions about the innovation, do not necessarily convert into creative educational practices in private colleges.

This conclusion is of theoretical importance as educational innovation is not only a cognitive outcome. Rather, it is a behavior process that is dependent on context and influenced by perceived feasibility, institutional expectations, and availability of support. This is in line with the Theory of Planned Behavior, which states that attitudes alone cannot predict behavior but that individuals must also think that there are supportive subjective standards and that they have sufficient behavioral control (Ajzen, 1991, 2002). Therefore, faculty may not be innovative even if they have the knowledge and good beliefs if they feel low autonomy, insufficient institutional support, and a significant risk of implementation.

Moreover, the non-significant direct effect of knowledge is in line with studies on technology integration and educational change that indicate that teacher knowledge is not necessarily translated into practice without confidence, enabling conditions, and supportive culture (Ertmer & Ottenbreit-Leftwich, 2010; Koehler & Mishra, 2009). Similarly, when experimentation is hampered by external hurdles or institutional constraints, teacher attitudes may be aspirational rather than implemented (Ertmer, 2005; Ertmer et al., 2012). Thus, knowledge and beliefs are seen as required but not sufficient criteria for educational innovation potential.

The minor direct effect of attitudes suggests that good inclinations toward innovation may give initial motivating energy. But this motivational effect seems constrained by insufficient contextual support. Similar findings from prior research on technology acceptance and innovation adoption have shown that attitudes influence intention and behavior but are strengthened when perceptions of usefulness, ease of implementation, facilitating conditions, and normative support are high (Scherer et al., 2019; Teo, 2011; Venkatesh et al., 2003). In this way, attitudes might operate as a trigger for innovation readiness, but it is the contextual variables that determine whether such a readiness leads to actual innovative activity.

The second research objective explored the impact of individual factors on dominant contextual elements. Results demonstrated that knowledge, beliefs, and attitudes had considerable beneficial effects on the major contextual elements. In this study, dominant contextual elements were





operationalized as views of contextual conditions by faculty members, including perceived social norms, perceived behavioral control, and attitudes towards innovative behavior.

This means faculty members' inclinations impact their interpretations of their institutional context. Faculty with more knowledge and more positive beliefs and attitudes are better equipped to see chances for innovation, to interpret institutional signals more positively, and to locate resources that support educational transformation. From the standpoint of planned behavior theory, perceived behavioral control and subjective norms are not only objective conditions but are also constructed through interpretations of available possibilities, limitations, and social expectations by individuals (Ajzen, 1991, 2002).

This finding is also in line with the innovation diffusion theory that highlights that the perceptions of innovation attributes such as relative advantage, compatibility, complexity, trialability, and observability have a substantial impact on the adoption decisions of individuals (Rogers, 2003). Faculty who regard an educational innovation as valuable, fit with their teaching aims, and possible to execute are more likely to perceive their institutional context as supportive than restrictive.

This interpretation is also consistent with previous higher education research. The impact of organizational culture, leadership support, collegial collaboration, and institutional preparation on teachers' response to technology-enhanced innovation has been reported in previous studies (Zhu, 2015; Zhu & Engels, 2014). Similarly, innovation research indicates that the organizational context influences adoption not only through formal structures, but also through members' perceptions of support, risk, autonomy, and implementation climate (Damanpour, 1991; Damanpour & Schneider, 2006). Hence, the present results support the idea of dominant contextual elements as a cognitively mediated setting and not as a simple objective institutional background.

The third purpose of the research was to evaluate the mediating effect of dominating contextual factors in the correlations between individual factors and educational innovation ability. Results showed that dominating contextual factors had an important mediating role in the impacts of knowledge, beliefs, and attitudes on educational innovation ability, while most direct effects were weak or non-significant.

The mediation pattern indicates that the dominant contextual elements are the main mechanism via which individual inclinations are converted into creative educational practices. Faculty members' knowledge, beliefs, and attitudes shape their perceptions of institutional support, social expectations, and control over innovation. These perceptions, in turn, lead to whether innovation is done in teaching and learning.

This finding is very consistent with the Theory of Planned Behavior, especially the key roles of subjective standards and perceived behavioral control in the formation of behavioral intention and action (Ajzen, 1991, 2002). It also aligns with research on technology acceptance and innovation adoption, showing perceived utility, facilitating conditions, institutional support, and implementation feasibility influence behavioral outcomes (Scherer et al., 2019; Teo, 2011; Venkatesh et al., 2003). That is, the potential to innovate is not only created by information or beliefs but by how much faculty members feel innovation is socially endorsed, institutionally possible, and professionally valuable. This mediating mechanism is especially relevant in the context of private universities in China. Private higher education institutions are often characterized by strong performance pressures, market-oriented governance, and managerial responsibility. Faculty members are unlikely to embrace educational innovation under such conditions if they see innovation as dangerous, unsupported, or inconsistent with institutional evaluation systems. Thus, even highly knowledgeable and motivated faculty may not show considerable innovation potential if they do not feel enough contextual support and behavioral control. Simultaneously, it is vital to note that the mediating variable in this study represents perceived contextual dominance, rather than objective institutional frameworks. Therefore, the results should be considered indicative of statistical mediation rather than definitive evidence of causality. Yet, the results bolster the thesis that educational innovation is influenced not only by institutional arrangements themselves, but also by how faculty members perceive, absorb, and respond to those arrangements. The findings overall contribute to the body of research on educational innovation by suggesting that knowledge, beliefs, and attitudes are essential antecedents, but their impact on educational innovation ability is mostly indirect. Dominant contextual elements provide a key mediating role in translating



internal preparation into actual inventive practice. Practically, the results imply that private universities should not rely only on faculty training or attitude-building programs. Instead, institutions should cultivate a supportive climate for innovation, enhance leadership encouragement, lower perceived risks, offer professional autonomy, and match assessment systems with new teaching techniques.

Knowledge Contribution

From the study entitled “Influencing Factors of Faculty Educational Innovation Ability in Private Universities in Liaoning Province: The Role of a Dominant Contextual Model,” new knowledge has been generated that advances understanding of how faculty educational innovation ability is formed and enacted within private higher education institutions.

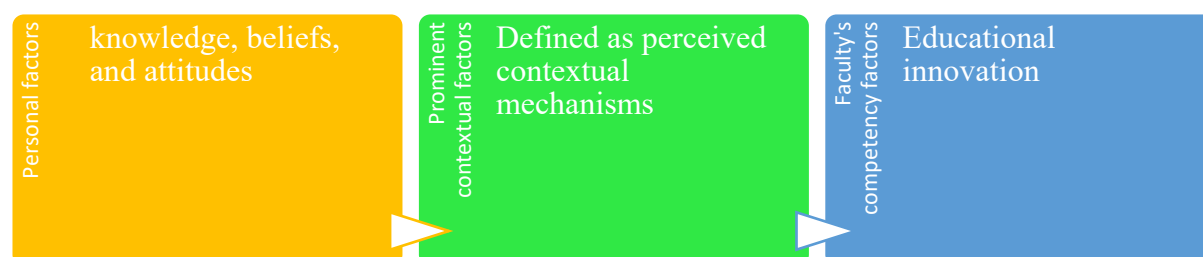


Figure 2: Dominant Contextual Model of Faculty Educational Innovation Ability

This figure presents a synthesized conceptual representation of the new knowledge generated by the study. The model illustrates the relationships among (1) individual factors (knowledge, beliefs, and attitudes), (2) dominant contextual factors conceptualized as perceived contextual mechanisms, and (3) faculty educational innovation ability. The directional paths indicate that individual factors influence educational innovation ability primarily through the mediating role of dominant contextual factors, which function as the central mechanism linking individual readiness to innovative educational practice in private university contexts. First, the study provides empirical evidence that faculty educational innovation ability does not emerge directly from individual-level factors such as knowledge and beliefs. Although attitudes toward innovation exert a limited direct influence, individual readiness alone is insufficient to produce sustained innovative educational practices. These findings challenge individual-centered assumptions commonly found in faculty development and innovation literature. Second, the study demonstrates that dominant contextual factors operationalized as faculty members' perceived contextual conditions, including perceived behavioral control, subjective norms, and perceived contextual support, play a central and decisive role in shaping educational innovation ability. These contextual mechanisms were found to exert a strong direct effect on innovation ability and to function as the primary pathway through which individual dispositions are translated into practice.

Third, the findings confirm that knowledge, beliefs, and attitudes act as important antecedents of dominant contextual factors, indicating that internal dispositions significantly influence how faculty members perceive, interpret, and evaluate their innovation-related environment. This highlights the cognitively mediated nature of context, suggesting that contextual dominance is not solely imposed by institutional structures but is also constructed through faculty members' perceptions and interpretations.

Theoretically, this study contributes new knowledge by reconceptualizing educational innovation ability as a context-mediated construct rather than a purely individual capability. The proposed Dominant Contextual Model extends existing innovation frameworks, such as the Theory of Planned Behavior and the Technology Acceptance Model, by empirically demonstrating that contextual mechanisms can override or suppress direct individual effects, particularly in private universities characterized by strong managerial control and performance-oriented governance.

Practically, the findings suggest that efforts to enhance faculty educational innovation should move beyond individual-focused interventions, such as training and skill development, toward context-centered strategies that strengthen perceived institutional support, social legitimacy, and faculty autonomy. By cultivating dominant contextual conditions that are perceived as supportive and enabling,



private universities can more effectively transform faculty members' internal capacities into sustainable educational innovation practices.

Recommendation

Based on the empirical findings and discussion, this study proposes the following recommendations to enhance faculty educational innovation ability in private universities in Liaoning Province through the effective activation of dominant contextual factors.

Policy-Level Recommendations

1. Given the dominant role of contextual factors in shaping faculty educational innovation ability, policymakers should prioritize the development of institutional environments that enable and legitimize educational innovation. Provincial education authorities are encouraged to incorporate innovation-supportive policies into evaluation and accreditation frameworks for private universities. Such policies may include recognizing innovative teaching practices in performance assessments, promotion criteria, and institutional quality reviews.

Furthermore, policy initiatives should move beyond skills-based training and emphasize contextual empowerment, including academic autonomy, decision-making participation, and resource accessibility. By strengthening perceived behavioral control and social legitimacy, policy interventions can create conditions under which faculty members' internal capacities are more effectively translated into innovative practices.

2 Institutional and Managerial Recommendations

At the institutional level, university leaders should focus on constructing dominant contextual conditions that actively support innovation, rather than relying solely on professional development programs. While training initiatives aimed at enhancing faculty knowledge remain important, they must be complemented by structural and cultural reforms.

University management should establish clear innovation-support mechanisms, such as dedicated funding for teaching experimentation, flexible curriculum design policies, and formal recognition of innovative teaching outcomes. In addition, leadership practices that promote trust, autonomy, and open communication can strengthen positive subjective norms and reinforce faculty members' confidence in engaging in innovation. Creating innovation-oriented communities of practice within departments can further amplify social support and reduce the perceived risks associated with pedagogical change.

3 Faculty Development and Practice-Oriented Recommendations

For faculty members, the findings highlight the importance of actively engaging with and shaping their innovation-related context. Faculty development programs should therefore shift focus from knowledge transmission to contextual agency, encouraging faculty members to identify opportunities, mobilize support, and negotiate institutional constraints.

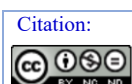
Professional development initiatives should integrate reflective practices that help faculty members align their beliefs and attitudes with contextual realities. Mentoring systems, peer collaboration, and interdisciplinary teaching teams can enhance perceived behavioral control and foster shared innovation norms. Such approaches enable faculty members to move from individual readiness toward collective innovation capacity.

Recommendations for Future Research

Future studies should further examine the dynamic and multi-level nature of dominant contextual factors in educational innovation. Longitudinal research designs are recommended to capture how contextual dominance evolves and influences innovation sustainability. Comparative studies across different provinces or institutional types would also provide deeper insights into contextual variation.

Additionally, future research may incorporate qualitative methods to explore how faculty members interpret and negotiate contextual constraints in their daily teaching practices. Expanding the conceptualization of dominant contextual factors to include leadership styles, organizational culture, and digital infrastructure would further enrich the understanding of innovation mechanisms in higher education.

Concluding Recommendation





Overall, this study recommends a strategic shift from individual-centered innovation interventions to context-centered innovation governance. Strengthening dominant contextual conditions represents the most effective pathway for enhancing faculty educational innovation ability in private universities, particularly within resource-constrained and performance-driven environments such as those found in Liaoning Province.

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