A STUDY ON THE IMPACT OF PERCEIVED SCHOOL INNOVATION CLIMATE ON INNOVATIVE WORK BEHAVIOR AMONG INSTRUCTORS AT SHANDONG YINGCAI UNIVERSITY, CHINA

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Abstract: This study aims to explore the current levels of perceived school innovation climate and innovative work behavior among instructors at Shandong Yingcai University (SYU), and to analyze the differences and interrelationships between the two under different background variables. Descriptive statistical analysis, independent samples t-tests, one-way ANOVA, correlation analysis and regression analysis were used to systematically examine the current level, group differences and influence relationship between instructors' perception of Innovation climate and innovative work behavior. The results show that: 1) the perceived school innovation climate by instructors is generally above average; Instructors' innovative work behavior generally shows a good trend. 2) there are significant differences in perceived Innovation climate among instructors of different genders, educational backgrounds and professional titles, while there are no significant differences among instructors of different ages, years of teaching experience and departments; 3）Significant differences in innovative work behavior are observed among instructors of different genders, ages, educational qualifications, and professional titles, but not among those with varying teaching years or departmental affiliations. Based on these findings, it is recommended to optimize organizational management strategies, improve the teacher development system, enhance the innovation incentive mechanism, and strengthen the cultivation of an innovation-oriented culture to comprehensively promote instructors' perception of the school innovation climate and their engagement in innovative work behavior.

Keywords: School Innovation Climate, Perceived School Innovation Climate, Innovative Work Behavior

Introduction

In an era of rapid technological development and a thriving knowledge economy, innovation has become a core element in promoting social progress and enhancing national competitiveness. This trend prompts education policymakers around the world to re-examine the professional role of instructors. Whether instructors, as leaders and implementers of higher education activities, can proactively break through traditional teaching models and carry out creative teaching activities directly affects the effectiveness of cultivating students' innovative literacy (Maun et al., 2023). Research shows that there is a close connection between the perceived school innovation climate by instructors' innovative work behavior. Colleges with a good school Innovation climate can often stimulate instructors' innovative enthusiasm and creativity.

At present, the academic community has conducted extensive and in-depth research on the relationship between the school Innovation climate perceived by instructors and their innovative work behaviors. However, most of these studies are based on the general university context, and there are relatively few studies on local undergraduate institutions, especially those with specific educational positioning and development goals like Shandong Yingcai university. In addition, they have mostly focused on analyzing the influence of one dimension or several dimensions, lacking systematic, comprehensive and in-depth empirical research on the relationship between the two. There is a lack of research on the specific mechanisms of interaction between the elements of the perceived school innovation climate and the dimensions of instructors' innovative work behavior within local undergraduate institutions.

In the context of the knowledge economy era and the continuous advancement of higher education reform, conducting in-depth research on the relationship between the school innovation climate perceived by instructors of Shandong Yingcai university and instructors' innovative work behavior will not only help enrich and improve theoretical research in the field of innovation management and teacher development in colleges and universities, It is of great theoretical and practical value to provide scientific basis and practical guidance for Shandong Yingcai university to optimize the innovation environment, enhance instructors' innovation ability and promote the innovative development of the university. Based on this, this study takes Shandong Yingcai university as the research object and delves deeply into the relationship between the perceived school innovation climate of its instructors and the innovative work behavior of instructors, providing useful references and lessons for the innovative development of the university.

Research Objectives

(1) To understand the current levels of perceived school innovation climate by the instructors of Shandong Yingcai University.

(2) To understand the current levels of innovative work behavior among instructors at

Shandong Yingcai University.

(3) To analyze the differences in perceived school innovation climate among instructors of Shandong Yingcai University under different background variables (gender, age, teaching experience, educational background, title, department).

(4) To analyze the differences in innovative work behavior among instructors at Shandong Yingcai University under different background variables (gender, age, teaching experience, educational background, professional title, department).

(5) To determine the effect relationship between the perceived school innovation climate by instructors at Shandong Yingcai University and their innovative work behavior.

Literature Review

The Connotation of The School Innovation Climate

The perceived school innovation climate is one of the important factors influencing the innovation of organizations and employees. Chen and Huo (2020) pointed out that the school Innovation climate is an environmental factor within an enterprise organization that prompts its members to generate innovative ideas and actions. It encompasses multiple aspects such as organizational values, management styles, and resource support, and therefore is not a simple concept but a comprehensive environmental trait. At the organizational level, Jia et al. (2022) pointed out that the organizational school Innovation climate is an environment formed within the organization that can prompt employees to generate breakthrough innovations, including the extent to which the organization encourages innovation, the sufficiency of innovation resources, and the tolerance of innovation risks, etc. At the individual level, Zhao et al. (2022), when studying the innovation and entrepreneurship capabilities of college students, proposed that the perceived school innovation climate is an environment in which the individual is located and thus can play a moderating role.

Measurement of The Perceived School Innovation climate by Instructors

The perceived school innovation climate by instructors is a multi-dimensional construct that typically encompasses five key dimensions: team support, task characteristics, resource supply, superior leadership support, and organizational philosophy. Existing research generally uses scales to measure it, with the team support dimension drawing on Anderson & West's (1998) team atmosphere scale, emphasizing the promoting effect of trust and cooperation among colleagues on teacher innovation. The measurement of the task characteristics dimension is based on the work characteristics model of Hackman & Oldham (1976), with a focus on the impact of task autonomy, diversity, and feedback on teacher creativity. The assessment of the resource supply dimension usually refers to the organizational support theory of Eisenberger et al. (1986). Cui Miao et al. (2019) used multivariate analysis to systematically review the existing research on perceived school innovation climate by organizational instructors, summarized its main elements and measurement

dimensions.

The Connotation of Innovative Work Behavior

Innovative work behavior refers to the process in which employees proactively propose, drive, and implement novel and practical improvement plans to optimize work efficiency (Zhou & George, 2001). The core of it consists of three stages: problem identification, idea generation and practical application (Scott & Bruce, 1994).

With the growing demand for educational development, Zheng Junyi and Lyu Wangang (2022) found that knowledge sharing promotes the occurrence of innovative behavior through psychological empowerment, indicating that interpersonal communication within the organization influences the specific process of instructors' innovative work behavior, and instructors' innovative work behavior is influenced by knowledge exchange and psychological state.

Du (2018) surveyed instructors of innovation and entrepreneurship education in colleges and universities and found that different instructors have different perceptions of entrepreneurship, and different perceptions of entrepreneurship also affect instructors' entrepreneurial behavior.

Measurement of Innovative Work Behaviors of Instructors

Research on the measurement of innovative work behaviors among instructors was conducted earlier abroad. Many scholars explored the relevant influencing factors from different perspectives in multiple dimensions, laying the foundation for the research on innovative work behaviors of instructors. Afsar et al. (2019) analyzed the relationship between transformational leadership, job reshaping, knowledge sharing and innovative work behavior from the perspective of organizational behavior. For the development of measurement tools, Salessi and Etchevers(2020) developed and validated the Teacher innovative Work Behavior Scale through literature review, interviews, and empirical studies with a large sample. In contrast, the measurement of innovative working behaviors among instructors mainly focuses on specific situations and influencing factors. Wang et al. (2024) studied the work motivation and action choice among instructors in the context of the reform of the employment system

Research on the Relationship between Perceived School Innovation climate and Instructors' Innovative Work Behavior

Perceived school innovation climate and instructors' innovative work behavior complement each other, and most scholars have done some research on the relationship between the two. Lambrix-schmitz et al. (2020) argued that a positive perceived school innovation climate would inspire instructors to engage in innovative work behavior, and a favorable innovation environment would provide instructors with support and encouragement to guide them to adopt new teaching methods and innovative teaching models in order to improve teaching effectiveness and quality.

At the empirical research level, many scholars have conducted relevant research on the relationship and influence mechanism between perceived school innovation climate and instructors'

innovative work behavior. Li (2019) suggests that the perceived school innovation climate by instructors can influence the innovative behavior of college students and help students form their own innovative role identity.

Methodology

This study focuses on the influence of the perceived school innovation climate on instructors' innovative work behavior, with instructors at Shandong Yingcai University as the research subjects. According to the method used by Krejcie & Morgan (1970) to determine the sample size, a stratified sampling method was adopted, with 291 samples collected from 1,200 faculty members in 6 colleges. The survey will be conducted by distributing electronic questionnaires to instructors of Shandong Yingcai University in the work group.

Based on the scale of Perceived School Innovation climate by instructors developed by Liu Yun et al. (2009) and the scale of Teacher Innovative Climate Behavior (ICB) designed by Ng & Lucianetti (2015), this study developed the Questionnaire on Perceived School Innovation Climate by instructors and teacher Innovative work Behavior. The questionnaire was divided into three parts: the first part was the basic information among instructors at Shandong Yingcai University, the second part was the perceived school innovation climate questionnaire, The questionnaire consists of 22 questions, including five dimensions. The third part was the Innovative work behavior questionnaire. The questionnaire consists of 9 questions, including three dimensions. After the questionnaires were collected, the researchers numbered each questionnaire and then typed them one by one into an Excel sheet for organization. Finally, the data was imported into SPSS22.0 for data checking, item analysis, and other tasks.

Results

Demographic Analysis of Respondents

Demographic analysis was conducted on the collected data on instructors' gender, age, years of service, educational qualifications, professional titles, and departments. The results are as follows: In terms of gender composition, there were 143 male instructors, and 148 female instructors. In terms of age distribution, the number among instructors aged 26-35 was the largest, with 107, followed by 70 instructors aged 36-45, 59 young instructors aged 25 and below, , and 55 instructors aged 46 and above, including 43 aged 46-55 and 12 aged 56 and above. instructors. In terms of teaching experience structure, instructors with 4-10 years of teaching experience account for the highest proportion, followed by 77 instructors with 3 years or less of teaching experience, 61 instructors with 11-15 years of teaching experience, 34 instructors with 16 years or more of teaching experience, including 20 with 16-20 years and 14 with 21 years or more. The majority among instructors have a bachelor's degree, with 145, followed by 79 with an associate degree, 54 with a master's degree, and

13 with a doctoral degree. In terms of professional title structure, the proportion among instructors with junior professional titles is the highest, with 200, 55 with intermediate professional titles, 22 with associate senior professional titles and 14 with senior professional titles. In terms of faculty distribution, the College of Engineering has the largest number of instructors, 84, followed by the College of Business with 48, the College of Preschool Education with 43, the College of Medicine with 42, the College of Music and Dance and the College of Design each with 37. Overall, the school's teaching staff is gender-balanced, with a majority of middle-aged and young instructors in terms of age and teaching experience, a backbone of bachelor's degree holders, and a tiered distribution of professional titles. The allocation of faculty in departments is in line with the school's disciplinary layout, providing a relatively reasonable talent support for teaching and research.

Descriptive Analysis on the Levels of Perceived School Innovation Climate among instructors

According to the analysis of the perceived school innovation climate at Shandong Yingcai University in Table 1, the evaluation of each dimension was at a relatively high level (M=3.91-3.99). Among them, the two dimensions of superior leadership support (M=3.99, SD=0.863) and organizational philosophy (M=3.99, SD=0.898) scored the highest, indicating that instructors had the highest recognition of the school's innovative philosophy and leadership support; Task characteristics (M=3.95, SD=0.875) and resource supply (M=3.94, SD=0.875) followed; The team support dimension score was relatively low (M=3.91, SD=0.829), but still remained at a high level. The overall Innovation climate score was 3.96 (SD=0.764), reflecting the positive evaluation of the school innovation climate by the school's instructors. The development of each dimension was relatively balanced, with some room for improvement in team collaboration.

Table 1: Current levels of Perceived School Innovation Climate

Variables	N	M	SD	Analysis
Team support	291	3.91	0.829	high
Task Characteristics	291	3.95	0.875	high
Resource supply	291	3.94	0.875	high
Support from higher-ups	291	3.99	0.863	high
Organizational philosophy	291	3.99	0.898	high
Perceived school innovation climate	291	3.96	0.764	high

Descriptive Analysis on the levels of instructors' innovative work behavior

According to Table 2, the analysis of instructors' innovative work behavior at Shandong Yingcai University shows that the performance in each dimension is at a medium level (M=3.16-3.46). The overall performance among instructors in innovative practice was acceptable; The creative

realization dimension came second; The dimensions of creative communication and creative generation scored relatively low. The lowest score was given in the creative generation dimension, reflecting a certain deficiency among instructors in stimulating innovative thinking. Overall, there is still much room for improvement in the innovative work behavior among instructors at the school, especially in the areas of creativity generation and dissemination, which need to be strengthened.

Table 2: Current Levels of Instructors' Innovative Work Behavior

Variables	N	M	SD	Analysis
Idea realization	291	3.37	0.909	Middle
Idea generation	291	3.16	0.906	Middle
Creative Communication	291	3.25	0.874	Middle
Innovative work behavior	291	3.46	0.801	Middle

Differences Analysis on the levels of perceived school innovation climate, instructors innovative work behaviors

There are gender differences in perceived school innovation climate in some dimensions, and there are significant educational backgrounds and professional titles differences in perceived school innovation climate. However, there were no significant age, teaching years and departments differences in it. In terms of differences in innovative work behaviors among instructors, there were significant gender, age, educational backgrounds, professional titles differences while there were no significant differences among instructors with teaching ages, titles and departments.

Correlation Analysis Between two main variables

According to the correlation analysis results in Table 3, the correlation coefficient r between the perceived school innovation climate of Shandong Yingcai University and instructors' innovative work behavior is 0.885, reaching a significant level at 0.01, indicating that there is an extremely significant positive correlation between the school Innovation climate and instructors' innovative work behavior.

Further analysis revealed that the correlation coefficients between each dimension of the school innovation climate and each dimension of Innovative work behavior were all greater than 0.660 and reached a significant level at 0.01. Specifically: Organizational ideology (DV5) had the highest correlation coefficient with innovative work behavior (r=0.823**); The correlation coefficient between resource supply (IV3) and innovative work behavior was 0.793**; The correlation coefficient between team support (IV1) and innovative work behavior was 0.793**.

These data fully demonstrate that there is a significant positive correlation between the perceived school innovation climate and all dimensions of innovative work behavior, and the degree of correlation is high.

Table 3: Correlation Analysis 1on the Perceived School Innovation Climate on Innovative work behaviors

	DV1	DV2	DV3	DV4	DV5	DV
IV1	0.660**	0.685**	0.704**	0.696**	0.725**	0.793**
IV2	0.644**	0.698**	0.685**	0.677**	0.738**	0.787**
IV3	0.671**	0.673**	0.676**	0.708**	0.744**	0.793**
IV	0.737**	0.767**	0.770**	0.776**	0.823**	0.885**

Note: *p<0.05, **p<0.01

IV1: Team support, IV2: Task characteristics, IV3: Resource supply, IV4: Superior leadership support, IV5: Organizational philosophy, IV: Perceived School innovation climate

DV1: Idea Generation, DV2: Idea Dissemination, DV3: Idea Realization, DV: Innovative Work Behavior

Regression analysis between two variables

According to the regression analysis results in Table 4, after controlling for demographic variables such as gender, age, and years of service, the perceived school innovation climate among instructors at Shandong Yingcai University has a significant positive predictive effect on Innovative work behavior (β=0.883, t=31.686, p<0.01). This result indicates that the school innovation climate is a key factor influencing instructors' innovative work behavior, and this influence is not disturbed by instructors' personal background characteristics. The findings provide strong evidence that schools can enhance instructors' innovation behavior by improving the Innovation climate.

Table 4: Regression Analysis of Perceived School Innovation Climate on Innovative work Behavior

	Non-standardized coefficients		Standardized coefficients	T	P	Collinearity diagnosis	
	Beta	S.E.	Beta			VIF	Tolerance
Constant	0.233	0.171	-	1.362	0.174	-	-
Perceived school innovation climate	0.926	0.029	0.883	31.686	0.000**	1.023	0.978
Your gender	0.035	0.044	0.022	0.786	0.432	1.018	0.982
Your age	-0.014	0.021	-0.020	-0.703	0.483	1.040	0.961
Your years of teaching experience	-0.000	0.021	-0.000	-0.010	0.992	1.025	0.976
Your educational qualifications	0.020	0.028	0.020	0.720	0.472	1.021	0.979
Your job title	0.021	0.027	0.022	0.785	0.433	1.020	0.980
Department	-0.008	0.013	-0.018	-0.626	0.532	1.042	0.959
R^2	0.785						
Adjust R^2	0.780						
F	F (7,283) =147.925, p=0.000						
D-W value	1.777						

Note: Dependent variable = Innovative work behavior
* p<0.05 ** p<0.01

Discussion

Current Perceived Innovation climate and innovative work behaviors among instructors at SYU

The findings show that the perceived school innovation climate among instructors at Shandong Yingcai University is generally at a high level (M=3.96). This situation may be related to school resource allocation or incentive mechanisms, where schools may focus more on the implementation of innovative outcomes rather than the incubation of ideas in the early stage (Xia et al., 2019). Overall, the positive evaluation of the school's innovative atmosphere provides a good foundation for instructors' innovative behavior, but the team collaboration and creative stimulation links need to be further optimized.

Differences in the perceived school innovation climate among instructors and instructors' Innovative work behavior with different demographic backgrounds

Male instructors' perception of team support and resource supply is significantly higher than that of female instructors. In innovative work behavior, men are better at generating and implementing ideas, while women are slightly better at communicating ideas, reflecting the influence of gender role socialization (Yang & Li, 2019).

Age and teaching experience have no significant influence on the perception of the innovation climate. However, instructors aged 25 and under perform outstandingly in innovative behaviors (Tang et al., 2022). Senior instructors (56 years old and above) scored the highest in the realization of ideas, demonstrating an advantage of experience (Polatcan & Balcli, 2019).

Master's students performed best in both innovation climate and innovative behavior, while doctoral students performed slightly worse in innovative work behavior (Afsar et al., 2019). Instructors with an associate degree scored the lowest in both categories (Hou & Wang, 2018).

Instructors with intermediate titles were the best in innovative behavior, while those with senior titles were at the bottom, possibly related to differences in motivation at different stages of career development (Li, 2019). Associate senior instructors performed well in perceived Innovation climate, but their innovative work behavior did not improve simultaneously (Bui & Nguyen, 2024).

There were no significant differences among departments, but the College of Engineering ranked at the bottom in both Innovation climate and innovation behavior (Jia et al., 2022). The School of Early Childhood Education and the School of Business stood out (Peng et al., 2024).

Relationship between Perceived School Innovation climate and Innovative Work Behavior among Instructors at SYU

Correlation analysis shows a significant positive correlation between perceived school innovation climate and Innovative work behavior, with the strongest association between organizational concepts and resource supply, confirming the key role of an innovation supportive environment in teacher behavior (Chen et al., 2024). Regression analysis further showed that the

predictive effect of the Innovation climate on innovation behavior was significant and not affected by demographic variables. While team support was associated with innovation behavior (r=0.793), it scored the lowest in the Innovation climate, suggesting that schools need to strengthen teacher collaboration mechanisms to further unlock innovation potential (Su & Liang, 2021).

Conclusion

This study reached the following conclusions:

(1) In terms of the perceived school innovation climate and the current levels of instructors' innovative work behavior at Shandong Yingcai University: The perceived school innovation climate by instructors is generally at a high level, with particularly prominent manifestations in the dimensions of superior leadership support and organizational concepts; The overall level of instructors' innovative work behavior is medium, and there is still much room for improvement in the dimensions of creativity generation and creativity dissemination.

(2) In terms of different background variables, there are significant differences among instructors at Shandong Yingcai University in perceiving the school innovation climate and innovative work behavior. In terms of perceived Innovation climate, male instructors had significantly higher levels of perception in the dimensions of team support and resource supply than female instructors; Instructors with master's and doctoral degrees have higher perception levels, while those with bachelor's degrees have weaker performance; Instructors with senior professional titles have the highest level of perception, while those with junior professional titles have a lower level, but there is no significant difference in age, teaching experience, or department. In terms of innovative work behavior, male instructors outperformed female instructors in the dimensions of idea generation and idea realization; Young instructors aged 25 and under excel in creative generation, while those aged 56 and above perform best in creative realization; Instructors with a master's degree have the highest level of innovative behavior, while those with an associate degree have a lower level. Intermediate title instructors performed the best, senior title instructors were relatively weak, and there was no significant difference in teaching experience and department.

(3) In terms of the influence of the perceived school innovation climate on Innovative work behavior by instructors at Shandong Yingcai University, there is an extremely significant positive correlation between the perceived school innovation climate and Innovative work behavior (r=0.885, $p<0.01$), with the influence of organizational concepts and resource supply dimensions being particularly prominent; Regression analysis further confirmed that the perceived school innovation climate had a significant positive predictive effect on Innovative work behavior, and this effect was not disturbed by background variables such as gender and age.

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