THE INFLUENCE OF ORGANIZATIONAL INNOVATION CLIMATE ON THE INNOVATION BEHAVIOR OF SPORTS COACHES IN CHINESE UNIVERSITIES

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Received: January 31, 2023; **Revised:** April 5, 2023; **Accepted:** May 8, 2023

Abstract

The purpose of this study was to explore the issue of the relationship between organizational innovation climate and innovation behavior among university coaches. The researcher conducted the study by using a mixed methods approach. The first step was a quantitative study in which 486 coaches were surveyed using a questionnaire developed in past research, and SPSS and AMOS were used to analyze the effect of organizational innovation climate on coaches' innovative behavior, and the mediating role of coaches' individual learning ability and coaches' internal work motivation between organizational innovation climate and coaches' innovative behavior, respectively. The second step was a qualitative study using a purposive sample to clarify the results more clearly. 15 samples included 8 university coaches, 2 senior managers, 3 middle managers and 2 athletic board managers. Data collection tools were unstructured interview formats, focus groups and thematic workshops. The concepts, classifications, and relationships among organizational innovation climate, coaches' innovation behavior, coaches' personal learning ability, and coaches' internal work motivation were analyzed. The results of this study showed that organizational innovation climate had a significant effect on innovation behavior; personal learning ability and internal work motivation mediated the relationship between organizational innovation climate and coaches' innovation behavior, respectively. The study suggests that simultaneous support and innovative idea execution are crucial in the influence of organizational innovation climate on innovative behavior. These findings provide a knowledge

base for future research, and the results of this study are expected to provide guidance for the development of competitive sports in Shanxi Province.

Keywords: Coaches, Innovation behavior, Organizational innovation climate, Competitive sports

Introduction

In the context of the reform of China's competitive sports system, the knowledge economy era has higher requirements for the level of competitive sports, and the innovation ability of coaches has become an important influencing factor and basic guarantee for the improvement of competitive sports. However, the innovation ability of coaches under the original system has become an obstacle to the development of internationalization, professionalization and marketization of competitive sports, which has slowed down the further development of Chinese competitive sports. The innovative ability of coaches is a necessary path to reform and deepen the development of competitive sports.

The innovative behaviour of coaches is a necessary path to reform and deepen the development of competitive sports. Therefore, this study intends to follow the research pathway of "innovation atmosphere - learning ability - work motivation - coaches' innovation behavior" to carry out analysis and proof, try to verify the regularity of this pathway, prove and analyze the training environment and innovation atmosphere of coaches in public universities in Shanxi Province, the learning ability of coaches, the work motivation of coaches and the innovation behavior of coaches, so as to propose suggestions to improve the training environment and innovation atmosphere of coaches, find ways to improve the learning ability and work motivation of coaches and find ways to improve the innovation behavior of coaches. In this way, the research team proposed suggestions to improve the training environment and innovative atmosphere of coaches, and looked for ways to improve the learning ability and motivation of coaches, so as to enhance the innovative power of coaches and further promote the level of competitive sports in Shanxi Province.

Research Objectives

1.To identify and analyze the connotation, components and influencing factors of the innovative behavior of coaches in colleges and universities in Shanxi Province.

2.To investigate how sports organizations and institutions in Shanxi universities can enhance the innovative behavior of coaches in the context of relationship between innovative atmosphere and coaches' innovative behavior.

3. To interpret the mediation of the coaches' learning ability and coaches' work motivation and the relationship between innovation climate and coaches' innovation behavior.

Literature Reviews

Organizational innovation climate has been identified as a key factor in promoting innovative behavior among employees (Huang & Chen, 2020; Zhou & Shalley,2011). Innovation climate refers to the degree to which an organization values and supports innovation. Previous research has suggested that employees who perceive their organization as having a strong innovation climate are more likely to engage in innovative behavior (Li et al., 2020; Shin & Zhou, 2007). H1: Organizational innovation climate has a significant positive effect on coaches' innovation behavior.

Chen G. (2008) argues, based on the perspective of organizational behavior, that individual learning ability refers to the ability of individuals to continuously acquire knowledge in order to maintain good survival as well as harmonious development in the face of the dynamically developing and changing external environment, and thus achieve improved behavior and enhance their competitive advantage. In this sense, learning ability reflects the level of coaches' ability to adapt to changes in the organizational environment, and conversely, the influence of the organizational environment on coaches' learning ability is the driving factor for coaches to continuously generate innovative behaviors. H2: Organizational innovation climate has a significant positive effect on individual coaches' learning ability.

Several studies have explored the link between individual learning capability and innovative behavior among employees. In the context of coaching, Choi and Kim (2018) found that coaches who had high levels of

learning capability were more likely to exhibit innovative behavior, which in turn contributed to the effectiveness of their coaching practices. Additionally, Cheng and Chiu (2018) found that coaches who had high levels of learning agility, a type of learning capability, were more likely to adopt new coaching strategies and techniques, and consequently deliver better coaching outcomes. H3: Individual coaches' learning ability has a significant positive influence on coaches' innovative behavior.

Research has highlighted the importance of organizational innovation climate in promoting employees' internal work motivation. For instance, Janssen, Van Yperen, and Ellemers (2004) found that a supportive innovation climate enhanced employees' intrinsic motivation, which in turn promoted their willingness to engage in innovative behavior. Similarly, Liu and Lu (2019) found that innovation climate was positively related to employees' psychological empowerment, which in turn enhanced their internal work motivation. H4: Organizational innovation climate has a significant positive influence on coaches' internal work motivation.

Recent research has highlighted the role of specific dimensions of internal work motivation in promoting coaches' innovative behavior. For example, Zhang, Cai, and Zhou (2020) found that coaches' need for achievement, a dimension of internal work motivation that reflects a desire to succeed and excel, was positively related to their innovative behavior. Similarly, Teng and Lee (2019) found that coaches' perceived autonomy, another dimension of internal work motivation that reflects the extent to which they have control over their work and decision-making, was positively related to their creative performance. H5: Coaches' internal work motivation has a significant positive influence on coaches' innovative behavior.

Recent studies have found that individual learning capability and internal work motivation play important roles in translating the effects of innovation climate into innovative behavior. For example, Hameed et al. (2021) found that individual learning capability mediated the relationship between innovation climate and innovative behavior among employees in the IT industry. Similarly, Zhang et al. (2019) found that internal work motivation mediated the relationship between innovation climate and innovative behavior among employees in the hospitality industry. H6: Individual coaches' learning ability mediates the influence of the organizational innovation climate on coaches'

innovative behaviour. H7: Coaches' internal work motivation mediates the influence of organizational innovation climate on coaches' innovation behavior.

Research Methodology

This study used a combination of qualitative and quantitative research methods to explore the relationship between organizational innovation climate and innovation behaviors among coaches in Shanxi Province universities. This study was an exploratory step-by-step study. The first step was a quantitative study that used a questionnaire developed in a previous study as a survey instrument with 486 coaches to explore the influence of organizational innovation climate on coaches' innovative behaviors. The second step was a qualitative study in which a purposive sample was used to more clearly clarify the results. 15 samples included 8 university coaches, 2 top managers, 3 middle managers, and 2 athletic board managers. Data collection instruments were unstructured interview format, focus groups, and thematic workshops.

Data Analysis: the researchers analyzed the data in two parts, namely: 1. Quantitative analysis: Analysis of organizational innovation climate and coaches' innovative behavior questionnaire. General information analysis of interviewers, questionnaire reliability validity test, structural equation analysis.2. Qualitative analysis: analysis of informal interviews to collect data. Analysis of data from focus groups and thematic workshops, content analysis method to draw conclusions.

Results

Descriptive Statistical Analysis, Demographic data of the questionnaire respondents was analyzed via frequency distribution and percentage statistics.

Table 1 Demographic Information of Respondents

	Demographic Details	Percentage (%)
Gender	Males	83.1
	Females	16.9
Age	≤25	18.3

	26-30	7.8
	31-35	14.8
	36-40	20.8
	41-45	20.6
	≥46	17.7
Education	High school, junior college and below	12.1
	College	9.5
	Undergraduate	37.0
	Master	41.4
Technical titles	National Level Coaches	8.2
	Senior Coach	11.5
	Level 1 Coach	15.6
	Level 2 Coach	14.2
	Level 3 Coaches	2.9
	Other	47.5

Demographics showed that there were 404 (83.1 percentage) male coaches and 82 (16.9 percentage) female coaches. There were 101 (20.8) coaches between 36-40 years old. There were 201 people (41.4%) with master's degree.223 people (45.9) have professional athlete experience and 263 people (54.1%) have no professional athlete experience. There were 76 first-level coaches (15.6), and 231 others (47.5).

Reliability analysis of the data: Table 2 Results of Outer Loadings, Cronbach's alpha, Composite reliability & AVE.

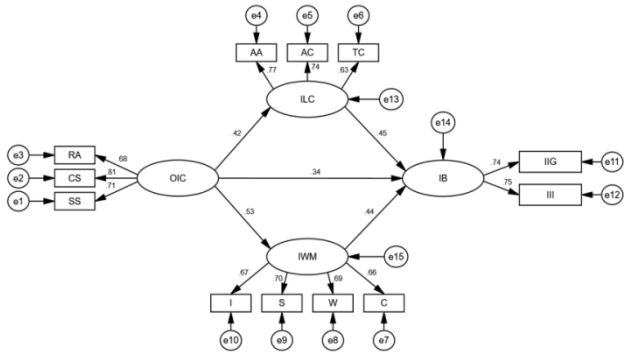
Variables	Dimension	Question items	Corrected Item Total Correlation	Cronbach's Alpha values for deleted items	Cronbach's Alpha for dimension	Cronbach's Alpha of variables	CR	AVE
Organizational Innovation Climate	Supervisor Support	OIC1	.703	.739	.825	.884	0.827	0.614
		OIC2	.662	.782				
		OIC3	.683	.758				

	Colleague Support	OIC4	.691	.817	.848		0.853	0.660
		OIC5	.690	.813				
		OIC6	.775	.733				
	Resource availability	OIC7	.693	.718	.814		0.816	0.597
		OIC8	.660	.750				
		OIC9	.650	.763				
Individual learning ability of coaches	Acquire Ability	ILC1	.662	.786	.830	.890	0.831	0.552
		ILC2	.661	.784				
		ILC3	.658	.786				
	Absorbing capacity	ILC4	.656	.786	.818		0.818	0.530
		ILC5	.669	.756				
		ILC6	.609	.784				
		ILC7	.612	.783				
	Transfer capacity	ILC8	.666	.757	.872		0.873	0.632
		ILC9	.756	.824				
		ILC10	.739	.831				
		ILC11	.691	.850				
		ILC12	.718	.839				
Coaches' internal work motivation	Competitiveness	IWM1	.725	.815	.860	.887	0.863	0.678
		IWM2	.781	.761				
		IWM3	.706	.831				
	Work input	IWM4	.665	.708	.801		0.801	0.574
		IWM5	.661	.712				
	Self-determination	IWM6	.615	.760	.839		0.841	0.638
		IWM7	.716	.764				
		IWM8	.728	.751				
		IWM9	.665	.812				
	Fun	IWM10	.730	.788	.852		0.853	0.659
		IWM11	.703	.812				
		IWM12	.737	.781				
Innovative behavior of coaches	Innovative Idea Generation	IB1	.719	.834	.868	.897	0.870	0.572
		IB2	.675	.845				
		IB3	.690	.842				
		IB4	.711	.836				
	Innovative Idea Implementation	IB5	.674	.845	.883		0.883	0.602
		IB6	.759	.847				
		IB7	.693	.863				
		IB8	.692	.863				
		IB9	.705	.860				
		IB10	.742	.852				

The validated factor analysis of organizational innovation climate showed that the latent variable supervisor support factor loading OIC1 (0.80) was the highest. The latent variable co-worker support factor loading OIC6 (0.85) was the highest. The latent variable resource availability factor loading OIC7 (0.81) is the highest. Each fit indicator 2/DF=2.596 is between 1 and 3, GFI=0.973>0.9, IFI=0.982>0.9, TLI=0.973>0.9 and CFI=0.982>0.9, and RMSEA=0.057<0.08, all of which are ideal values. Therefore, the model can be considered to have a good fit.

The validated factor analysis of coaches' individual learning ability showed that the latent variable acquisition ability factor loading ILC1 (0.76) was the highest. Latent variable absorptive capacity factor loadings ILC8 (0.77) were the highest. Latent variable transfer ability factor loadings ILC9 (0.83) were the highest. Each fit index 2/DF = 1.622 is between 1 and 3, GFI = 0.973>0.9, IFI = 0.988>0.9, TLI=0.985>0.9 and CFI=0.988>0.9 between RMSEA = 0.036<0.08, all of which are ideal values. Therefore, the model can be considered to have a good fit.

The validated factor analysis of coaches' internal work motivation showed that the latent variable competitiveness factor loading IWM2 (0.88) was the highest. The latent variable work input factor loading IWM4 (0.80) was the highest. Latent variable self-determination factor loadings IWM8 (0.83) were the highest. Latent variable fun factor loadings IWM10 (0.84) were the highest. Each fit indicator 2/DF = 1.387 was between 1 and 3, GFI = 0.978>0.9, IFI = 0.994>0.9, TLI=0.991>0.9 and CFI-0.994>0.9 between RMSEA = 0.028<0.08, which were all ideal values. Therefore, the model can be considered to have a good fit. The validated factor analysis of coaches' innovative behavior showed that the latent variable innovative idea generation factor loadings IB1 (0.78) were the highest. The highest factor loadings of the latent variable innovation idea implementation IB6 (0.82). Each fit index 2/DF = 2.986 is between 1 and 3, GFI = 0.958>0.9, IFI = 0.973>0.9, TLI = 0.964>0.9 and CFI = 0.973>0.9, and RMSEA = 0.064<0.08, which are all ideal values. Therefore, the model can be considered to have a good fit. Structural equation model fit test. The main path results of the model are shown in the figure. Figure 1 Structural Equation Modeling.



The path analysis revealed that the organizational innovation climate had a significant positive effect on individual coaches' learning ability. The organizational innovation climate had a significant positive influence on coaches' internal work motivation. Coaches' individual learning ability has a significant positive influence on coaches' innovation behavior. The internal work motivation of coaches has a significant positive influence on coaches' innovation behavior. The organizational innovation atmosphere has a significant positive influence on the innovation behavior of coaches. The fitting index of model operation is shown in the table, and the fitting index is: $\chi 2/df = 2.839$，less than 3.GFI = 0.956，AGFI = 0.930，more than 0.8，IFI=0.9956，TLI = 0.940，CFI = 0.955，more than0.9，RMSEA = 0.062，>0.05. the fitting criteria of the comparison table and the fitting index of the model all meet the requirements, so the path of the model is analyzed.

Path Analysis, in this study, AMOS22.0 software was used to analyze the path of structural equation model, so as to obtain the path coefficient value of structural equation model and C.R. The path coefficient reflects the influence relationship and degree between variables.

Table 3 Path coefficient test of structural equation model

Hypothesis	Path	Estimate	S.E.	C.R.	P	Results
H1	Individual learning ability<---Organizational Innovation Climate	.415	.059	6.856	***	Supported
H2	Internal work motivation<---Organizational Innovation Climate	.528	.061	8.097	***	Supported
H3	Innovative behavior<---Individual learning ability	.445	.053	8.045	***	Supported
H4	Innovative behavior<---Internal work motivation	.440	.062	7.170	***	Supported
H5	Innovative behavior<---Organizational Innovation Climate	.337	.059	5.376	***	Supported

Note: *** indicates P<0.001.

The final fitting results of the structural equation model are shown in the table, and there are five paths: “individual learning ability <- organizational innovation climate” path coefficient 0.415 (p<0.001), “internal work motivation <- organizational innovation climate" path coefficient 0.528 (p < 0.001),” innovative behavior <-- individual learning ability” path coefficient 0.445 (p <0.001), “innovative behavior <-- internal work motivation” path coefficient 0.440 (p <0.001), “innovative behavior <-- internal work motivation” path

coefficient 0.440(p <0.001), and the path coefficient of "innovative behavior <-- organizational innovation climate" was 0.337 (p<0.001). All paths showed significant performance.

Intermediation effect test, Table 4 Results of intermediate effect test.

Parameter	Estimate	Lower	Upper	P
Organizational Innovation Climate - Individual Learning Ability - Innovative Behavior	.185	.118	.269	.000
Organizational Innovation Climate - Internal Work Motivation - Innovation Behavior	.232	.161	.309	.000
Direct effect: organizational innovation climate - innovation behavior	.337	.214	.463	.000
Total effect: organizational innovation climate - innovation behavior	.754	.666	.837	.000

According to the results of the analysis in Table 5, it can be seen that the mediating effects of individual learning ability and internal work motivation in the model are tested separately by Bootstrap method.

The mediating effect of organizational innovation climate→individual learning ability→innovation behavior is 0.185, corresponding to 95% confidence interval [0.118,0.269], which does not contain 0, indicating that the mediating effect of individual learning ability between organizational innovation climate and innovation behavior is significant. The mediating effect of organizational innovation climate → internal work motivation → innovative behavior is 0.232, corresponding to 95% confidence interval of [0.161,0.309], between which does not contain 0, indicating that the mediating effect of internal work motivation between organizational innovation climate and innovative behavior is significant.

The direct effect corresponds to a 95% confidence interval of [0.214,0.463], which does not contain 0 between them, indicating that the direct effect holds. Hypothesis testing results, Combining the results of the statistical analysis of the data mentioned above, the hypothesis validation of this study is as follows. Table 5 Hypothesis testing summary table

Assume	Research Hypothesis	Test results
H1	Organizational innovation climate has a significant positive influence on coaches' innovation behavior	YES
H2	The organizational innovation atmosphere has a significant positive influence on coaches' learning ability	YES

H3	Coaches' learning ability has a significant positive influence on coaches' innovation behavior	YES
H4	The organizational innovation atmosphere has a significant positive influence on coaches' motivation	YES
H5	Coaches' work motivation has a significant positive influence on coaches' innovative behaviors	YES
H6	Coaches' individual learning ability has a mediating effect on coaches' innovative behavior in the organizational innovation climate	YES
H7	Coaches' internal work motivation mediates the effect of organizational innovation climate on coaches' innovation behavior	YES

Discussions

Organizational innovation climate in terms of university coaches is the perception of the penetrating orientation, innovative characteristics and the level of innovation support in the university environment. Three dimensions of organizational innovation climate atmosphere, resource availability, colleague support and supervisor support. Liu, Yun (2011) showed that organizational innovation climate has a positive influence on employees' innovative behavior and, similarly, can be applied to coaches.

The process of innovative behavior of coaches is the combination of innovative ability with theoretical knowledge of sports and practical experience in sports, applied to identify, analyze and solve new problems in sports training and achieve innovative results. Coaches' innovative behavior is divided into two dimensions, innovative idea generation and innovative idea execution.

The individual learning ability of coaches is of great significance for individuals to cope with changes in the external environment and promote the development of the whole society. In order to maintain and improve coaching, coaches constantly seek knowledge and information actively and improve cognitive patterns and behaviors through absorption and transformation, so as to obtain the ability of continuous competitive advantage. Therefore, the personality learning ability of coaches is divided into three dimensions, the ability to acquire knowledge, the ability to absorb knowledge and the ability to transfer knowledge.

Internal work motivation of coaches is the enjoyment, interest and satisfaction of coaches for curiosity and self-challenge of work, which can be seen as receiving internal motivation. When coaches have more fun and pleasure in their work, they tend to accept new challenges. Therefore, coaches' internal

work motivation is divided into four dimensions, competitiveness, work engagement, self-determination and fun.

Conclusions

China is in the era of “mass entrepreneurship and innovation”, and innovation has become the core driver of economic development. After literature review, formulation of research hypothesis, construction of research model, questionnaire design and statistical analysis, this study empirically analyzed the relationship between organizational innovation climate and innovative behavior, and further analyzed the mediating effects of individual coaches' learning ability and coaches' internal work motivation, which are two mediating effects. This led to the following conclusions.

The organizational innovation atmosphere has a significant positive influence on coaches' innovative behaviors. This verifies the effectiveness of the organizational innovation atmosphere as a whole. A positive and good organizational innovation atmosphere can promote the innovative behaviors of coaches, while a negative and negative organizational innovation atmosphere is not conducive to the innovative behaviors of coaches. Individual coaches' learning ability has a mediating role in the influence of organizational innovation atmosphere on coaches' innovative behaviors.

Coaches’ learning ability can enhance the degree of communication among coaches, improve the efficiency of work learning, and lay the foundation of knowledge accumulation for the subsequent innovative behaviors. This indicates that the organizational level should not only create an atmosphere conducive to innovation, but also provide opportunities for coaches to learn and communicate, and provide opportunities and conditions for coaches’ knowledge transfer. Coaches’ internal work motivation plays a mediating role in the influence of the organizational innovation atmosphere on coaches' innovation behavior. With the enhancement of organizational innovation atmosphere, the internal work motivation of coaches is subsequently enhanced, which improves the work motivation and efficiency and lays the foundation for the innovative behavior of coaches.

The model of “organizational innovation atmosphere-individual coaches' learning ability-coaches’ innovation behavior” and “organizational innovation

atmosphere-coaches' internal work motivation-coaches' innovation behavior" were constructed. The model of "organizational innovation atmosphere-coaches' internal work motivation-coaches' innovation behavior" was constructed, and the relationship between organizational innovation atmosphere and coaches' innovation behavior was verified by combining the characteristics of organizational innovation atmosphere in the current context of China, which enriched the theories in the field of organizational innovation atmosphere. At the same time, in order to explore the inner operating mechanism of the influence of organizational innovation climate on coaches' innovation behavior, this study introduced coaches' individual learning ability and coaches' internal work motivation as mediating variables, and the results showed that the two variables played a mediating role in the influence of organizational innovation climate on coaches' innovation behavior respectively. This provides a new path for the research related to organizational innovation climate and coaches' innovation behavior.

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