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Research on the Influence of Heterogeneity of University Teacher Team and Knowledge Governance on Innovation Ecology in Colleges

Guanghua FU[1], Jian ZHANG[2], Xinhua BI[3]

Abstract

For university faculty team, the innovation ecology within the school not only helps to improve the atmosphere and ability of innovation, but also is an important condition to optimize the whole university. It is an issue that all universities urgently need to improve under the development of the times. Based on the relevant literature and theories, we systematically put forward the model of the influencing factors of the innovation and ecological development of colleges in China under the background of the thesis. We focus on analyzing the mediating role of team heterogeneity and the leading role of knowledge governance. To a certain extent, this makes up for the deficiencies of the existing literature. Finally, the conclusion of the study shows that the heterogeneity of university faculty team and the good mechanism of knowledge governance improve the effectiveness of college behavior integration. This makes the continuous development of university faculty, innovation and ecological development of colleges is getting better and better. This not only provides a new perspective for the theoretical exploration of knowledge sharing in universities, but also provides theoretical guidance and methodological support for the subsequent research on knowledge management.

Keywords: team heterogeneity, knowledge governance, innovation, innovation ecology.

Introduction

Knowledge plays an important role in knowledge-based economy, especially in innovative economy. At present, most studies focus on the knowledge management of business organizations or the public sector, while the knowledge management

[1] Department of Management Information Systems, School of Management Jilin University, CHINA. E-mail: guanghuafujilin@163.com

[2] School of economics and management, Chongqing University of Arts and Sciences, CHINA. Email: zhangjiancuas@gmail.com (Corresponding author)

[3] Department of Management Information Systems, School of Management Jilin University, CHINA. E-mail: xinhuabijilin@163.com

of universities has not drawn much attention. In the past 10 years, the number of college faculty teams has been continuously optimized (Benoliel & Somech, 2016; Davenport, 2016). The number of innovation teams in higher education institutions in the Ministry of Education has been 781 from 2005 to 2014 (Davenport, 2016; Muller, Shacham & Herscovitz, 2017; Mohseni *et al.*, 2015). The number of innovation teams in colleges and universities in 2014 was about 1.73 times that of 2005. College faculty team can not only achieve the results of innovation, promote the development of disciplines, but also help to further optimize the innovation and ecological environment of colleges and universities.

Therefore, it is of great theoretical and practical significance to arouse the enthusiasm of knowledge governance of university faculty team and to study the mechanism of knowledge governance influence. Mundet-Bolos *et al.*, (2017) points out a three-dimensional strengthening: social (I am in a relationship); emotional (I am well); and cognitive (positive thinking). In fact, it is not enough to rely on knowledge governance techniques for knowledge activities. We need appropriate institutional arrangements to coordinate knowledge activities using formal or informal organizational mechanisms and organizational structures (Williams, 2016; Sullivan, Murphy, & Fincham, 2015). Knowledge Governance theory opens up a new way of understanding knowledge management that addresses the problem of "knowledge-efficient organization." (Chunmei, & Zhang, 2017). However, based on the theory of knowledge governance, there is a lack of comprehensive and systematic empirical research on the influencing factors of knowledge governance in university faculty team (Dye & Alter, 2015). Therefore, the research question of this paper is: Does knowledge governance have an impact on the innovation and ecological development of colleges and universities? Figuera, & Torrado (2015) focus on the process of integration and the trajectories through university of students entering university from vocational education and training within the context of degrees in the Social Sciences. Scholars have different definitions of knowledge governance. For example, Wei (2014) considered the theory of enterprise knowledge as governance, coordination and control over the process of knowledge exchange, transfer and sharing. From the perspective of sociological anthropology, Stehr (2017) pointed out that knowledge governance is the governance structure that affects knowledge transfer and mobility, including transactions, power and gifts. From the perspective of organizational behavior, Foss mainly emphasizes the governance of incentives, systems and atmosphere. Most of these definitions start from an enterprise perspective and focus on the formal governance of knowledge processes. Foss's research on knowledge governance is relatively mature and comprehensive (Giebels, van Buuren & Edelenbos, 2016). Its definition of knowledge governance includes both formal knowledge governance and informal knowledge governance. Therefore, this article follows the definition of knowledge management Foss to carry out research. The essence of Sense of Ownership is the high degree of autonomy of the members of the organization. The resulting initiative to participate in the spirit and teamwork, will promote the

team members of the organization's trust, care and love, bringing strong cohesion and interpersonal relationships within the organization.

Formal knowledge governance focuses on motivating, restraining, and guiding from the institutional level to optimize knowledge activities. Through effective work design and a positive incentive system, the members of the organization can deeply feel the close relationship between individual interests and organizational interests. Informal knowledge management tends to optimize knowledge activities through the cultivation of organizational climate (van *et al.*, 2016). By creating a fair and harmonious organizational culture, implementing scientific and democratic management, optimizing the psychological environment of the organization, and cultivating the values of the organization, the enthusiasm of the members of the organization can be mobilized and their sense of ownership can be cultivated. Researchers who have a strong sense of ownership will be more consciously involved in scientific research projects, which in turn may affect their knowledge sharing behavior. Therefore, it is worth discussing whether the knowledge management of domestic universities can influence the innovation and ecological environment of colleges and universities through ownership.

Literature Review

Building a high-quality teaching staff is the cornerstone of the development of colleges and universities. Former President Konant of Harvard University once said: "The honors of a university lie not in its school buildings and the number of people, but in the quality of its generation after generation. A school must stand by and teachers must excel." College teachers are the first impetus for university cultural innovation, technological innovation and system innovation (Zaman, Yeo & Kulathuramaiyer, 2015). University teachers are not only the core resources of schools but also the main force for realizing the strategy of strengthening China through human resources.

With the development of society and economy, the reform of higher education has been continuously deepened and the competition among higher education institutions has become increasingly fierce. University competition is the competition of talent and teachers competing. To build a capable team of teachers is the fundamental requirement of colleges and universities. The innovation activities of outstanding faculty members have been improving the ecological environment of colleges and improving the national higher education level. The quality of teaching staff is a reflection of the core competitiveness of colleges, which has a decisive influence on the development of colleges and universities. The construction of teaching staff is the fundamental guarantee to improve the quality of higher education. The first element of a university is the teaching staff, which is a prerequisite for guaranteeing the quality of personnel training in colleges (Zaman, Wee & Kulathuramaiyer, 2015). The quality of

teachers determines the quality of education, teacher level determines the level of education. Teachers should be innovative enough to cultivate creative talents; teachers should have realistic and pragmatic spirit in order to educate pragmatic students. Teachers should constantly enrich and perfect themselves to create a comprehensive development of people. The level of teaching in colleges depends on the level of university teachers (Pinho I & Pinho C, 2016). The construction of college faculty is an eternal theme of college construction, and its level directly determines the level of running a university.

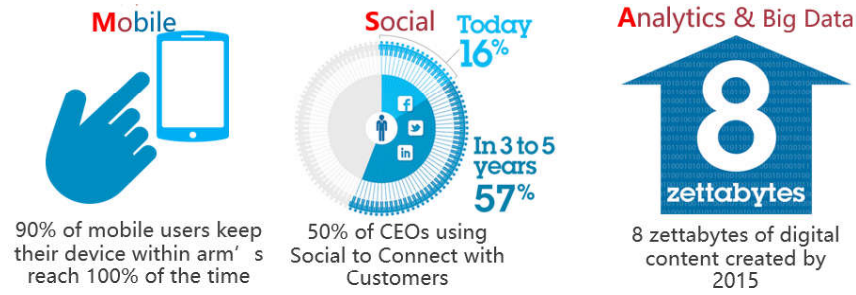

Figure 1. Three Reasons for Innovative Development in Modern Society

As a high-level knowledge group, college teachers have multiple levels of physical, emotional, dignity, achievement, self-realization and other needs. The ultimate goal of the work is to achieve self-worth. They take the initiative to assume organizational responsibilities and contribute their enthusiasm, initiative, imagination and creativity to the achievement of their organizational goals. Therefore, teamwork is the natural result of human development (Wang, Peng & Zhang, 2015). Team heterogeneity is a mixture of team members' personality, gender, attitude, background, or empirical factors. Jackson summed up the relationship between heterogeneity and team effectiveness. He believes that heterogeneity is related to the team's creativity and the effectiveness of decision-making. In colleges and universities, the disciplines team members have a high degree of professional commonalities and relatively small differences in disciplinary direction. The differences are mainly reflected in the members. When the degree of team heterogeneity is low, it is difficult to play the role of division of labor, team performance is lower. As the team's heterogeneity increases, the wider the field of concern is, the more diverse information the team can bring. The diversity of information is one of the important elements of innovation. In addition, the excitement of team members with different degrees of disagreement is inconsistent and the perspective of observation problems is different. The viewpoint proposed is multidimensional, which is also one of the prerequisites for innovation work. The development of innovative ecology in colleges and universities also needs multidimensional views and diversified information, which requires the team's heterogeneity to play a leading role (Chen & Fong, 2015). Therefore, in the highly heterogeneous team,

the members exchanged rich content and active atmosphere of innovation, which easily collided with new ideas. Therefore, there is a positive relationship among the heterogeneity of subject teams, the team innovation atmosphere and team innovation performance.

In the era of knowledge economy, the organization relies more and more on the application of knowledge, so that the heterogeneous knowledge team is getting more and more attention. The development of modern knowledge, technology and ability has become more and more complicated. The conflict between the increase of the cost of knowledge acquisition and the rapid increase of the knowledge value requires the heterogeneous knowledge team to work together. This allows their respective knowledge to flow effectively within the organization and be shared by all. The work style of a heterogeneous knowledge team with synergistic performance meets the requirements of an innovative organization centered on knowledge innovation (Shi-jian, Zhuan-zhuan & Xin-min, 2017). How to improve team synergy has also become a hot issue that knowledge-based organizations are concerned about. Under the new normal, the development of innovation and ecology in colleges and universities needs to be repositioned. It needs to give full play to the advantages of human resources, rely on the quality of personnel and technological progress. Colleges should make full use of modern information technology to promote the innovation and development of the personnel training mode (Troxler, 2010). It not only reflects the academic, democratic and collaborative ideas of modern curriculum teaching, but also emphasizes the comprehensiveness, innovation and practicality of classroom teaching. Without any position security, unstable financial circumstances, and unsubstantial institutional backing (Androniceanu, 2014), contingent faculty may be deficient in the self-determination and prestige they demand to stimulate students by putting forward uncommon viewpoints, reviewing ordinarily established opinions, or assigning low grades. The modernization of education governance is a process of educational governance transformation from the traditional model to the modern one, which is the criticism, sublation and reflection on the traditional education governance. The modernization of education and governance can not be achieved by a single subject but depends on the integration of the pluralistic subject. The higher the degree of integration of the governance body in the process of education governance, the faster the modernization of education governance will be. Among them, "knowledge" plays an important role in the integration of educational governance subjects. Based on the knowledge transfer, sharing, exchange, integration and other means of multi-governance process is also called knowledge management. Knowledge governance refers to the choice of formal and informal organizational mechanisms and organizational structures to optimize, select, create, share and use knowledge (Curley, Formica, & Nicolo, 2013). This definition includes several layers of meaning. First, knowledge governance is a system design or institutional arrangement that includes the choice of governance structure and the design of governance or coordination mechanisms. These mechanisms and structures

mainly include performance incentives, ownership distribution, the allocation of decision-making power, implied contracts or psychological contracts and the division of labor within the organization. Second, one of the notable features of knowledge governance is that it will formalize institutional design to influence informal organizational practices in order to achieve the goal of knowledge governance. Furthermore, the purpose of knowledge governance is to optimize knowledge transfer, sharing and utilization (Kelley & Pyenson, 2015). A model of knowledge governance always corresponds to a certain cost-effectiveness of knowledge governance. Both mechanisms work together in knowledge governance through alternative and complementary effects. At the same time, the sharing and innovation of knowledge itself is also an important way to promote the consensus reached among the subjects of governance of multiple education and to promote the solution of public affairs in education. It provides direction for the integration and improvement of educational governance. Therefore, the value of knowledge governance in the modernization of education governance highlights.

Innovation ecosystem is a collection of innovation system, innovation network and innovation environment. Innovation ecosystem is a dynamic open system composed of elements of innovation, innovation organization and innovation environment. It is a concept of space that contains a certain area and scope. In the system, each element interdependently exchanges, co-evolves and interacts adaptively for the overall goal of innovation (Foss & Pedersen, 2004). Innovative ecosystems consist of multiple elements that make the system appear unusually complex. At the same time innovative ecosystem is also open. It has extensive contacts with the outside world in every aspect of technological research, development and diffusion. And it continually exchanges energy, matter and information with its surroundings. Innovative ecosystem is not a simple addition of system elements and accidental accumulation, but a unity of each element through nonlinear interaction. The various elements of the system live together and adapt to each other. Among them, it has the function of self-adaptation and self-regulation.

Research Design

Data Source

Knowledge governance includes both formal and informal dimensions. Formal Knowledge Governance (FKG) mainly refers to the organizational structure, reward system, job design and leadership (Obermeister, 2017). Knowledge management in the era of science and technology is based on knowledge sharing and technology sharing. In this kind of environment, the innovation performance of our colleges and universities will gradually increase, which will indirectly affect the innovation ecology of colleges and universities and promote their development. Based on this, this article makes the following assumptions:

H1: Formal knowledge governance positively affects the development of innovative ecology in colleges.

H2: Informal knowledge governance positively affects the development of innovative ecology in colleges.

Ownership is a driving force that benefits the team's operations and efficiency. In college faculty, when team members have a strong sense of ownership, they tend to actively interact with team members and are willing to accept the knowledge delivered by team members. If there are heterogeneous teacher teams, the quality of the teachers in the teams is also different, so there are differences in the spirit of their masters. And this different sense of ownership is an important manifestation of the heterogeneity of college faculty team. The more effective management of knowledge within colleges and universities, the easier it is to cultivate the masters of the teachers (Li, 2016). This makes it easier to make contributions to colleges and universities and indirectly promote the development of innovation and ecology in colleges and universities. In summary, the following assumptions are made:

H3: The heterogeneity of the teacher team plays an intermediary role in the process of formal knowledge governance to promote innovation and ecological development in colleges and universities.

H4: The heterogeneity of the teacher team plays an intermediary role in the process of informal knowledge governance to promote innovation and ecological development in colleges and universities.

Discipline Commitment is an extension of organizational commitment. Based on the dimension of emotional commitment in organizational commitment, this study defines the sense of belonging of the university faculty team as the strength of the faculty members who identify with and participate in the school construction activities. That is, the teacher's dependence on the school's feelings, identity and loyalty is mainly due to their deep feelings of the school, rather than material benefits. When teachers have a vested mentality in their schools, they may show a higher level of activity and are more willing to communicate and cooperate with team members. This obviously increases their enthusiasm for work and actively engages in school development. Discipline belonging to a higher overall sense of the team, the effect of knowledge governance may be better, which showed a high degree of innovation in college ecology.

Based on the above analysis, the following assumptions are proposed:

H5: The sense of belonging of university teachers plays a mediating role in the process of formal knowledge governance to promote innovation and ecological development in colleges and universities.

H6: The sense of belonging of university teachers plays a regulatory role in the informal knowledge governance to promote the innovation and ecological development of colleges and universities.

The conceptual model of the study is shown in *Figure2*.

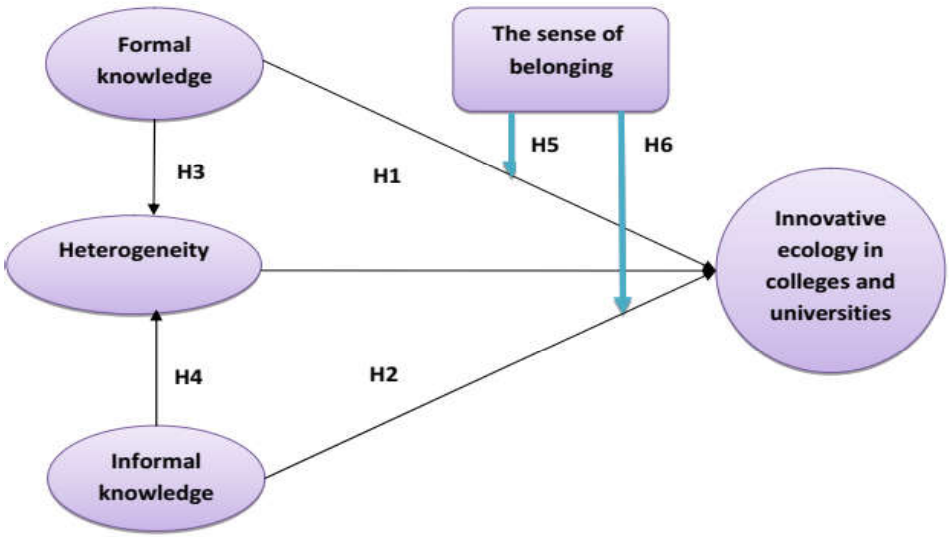

Figure 2. The Conceptual Model of the Research

The object of this experiment is a member of the teachers' team in nine universities in China. We have 527 teachers conducted the survey. The survey was conducted on the voluntary participation of the respondents. After investigation, 456 questionnaires were finally collected. After screening unqualified questionnaires, 409 valid questionnaires were obtained and the effective questionnaire recovery rate was 77.6%. *Table 3* shows the basic statistical characteristics of the sample, of which the proportion of males is larger and the proportion of the population aged 23- 29 accounts for 88.3% of the total sample. These characteristics are suitable for the sample requirements in this study.

Variable	Category	Number	Percentage	Variable	Category	Number	Percentage
Gender	Male	277	67.7	Time (Stay in team)	0-3	395	96.6
	Female	132	32.3		4-10	10	2.4
Age	18-22	40	9.8		10/more	4	1.0
	23-29	361	88.3	Education background	Under graduate	17	4.2
	30-39	6	1,5		Post graduate	356	87.0
	40-49	2	0.5		PhD student	36	8.8

Table 1: Basic Features of the samples

In this study, six latent variables were measured. Rexroth seven scales were used to measure the indicators ("1" means "very disagree" and "7" means "strongly agree"). Formal knowledge governance, informal knowledge governance, the process of innovation and ecology learn from predecessors have scales. Sense of ownership, discipline, belonging to the measurement based on China's background, combined with relevant literature and the characteristics of this study developed. In order to ensure the validity of the content of the research and the applicability of the questionnaire, we asked people to review all the measurement indicators of the questionnaire before the survey and make corrections based on their opinions before conducting a formal questionnaire. Table 2 shows the descriptive statistics of variables and the correlation coefficient matrix.

Table 2. Descriptive Statistics and Discriminant Validity Tests of Variables

Variable name	1	2	3	4	5
Formal knowledge governance	1				
Informal knowledge governance	0.508* *	1			
The Heterogeneity of the Teacher Team	0.462* *	0.659* *	1		
The Sense of Belonging	0.351* *	0.428* *	0.558* *	1	
Innovative ecology in colleges	0.545* *	0.456* *	0.523* *	0.524* *	1

The study used SPSS 17.0 to conduct reliability analysis, descriptive statistical analysis and test of regulatory effect. Due to the existence of some deficiencies in regression statistics, the use of structural equation model has the advantages of both statistical factor structure and relationship, estimated model fitting degree (Taylan, Kaya & Demirbas, 2016). Therefore, this study used the AMOS 20. 0 for confirmatory factor analysis, path analysis and intermediary role of the test.

Computational Structural Equation Modeling (SEM) is a statistical method used to work with causal relationships. It can also perform path analysis, factor analysis, regression analysis and analysis of variance.

The structural equation model is a multivariate statistical method that uses linear equations to represent the relationship between observed variables and latent variables as well as potential variables. Its essence is a generalized general linear model. Structural equation model is divided into: measurement equation and structural equation.

The measurement equation describes the relationship between a latent variable and an indicator. However, the relationship among learning motivation, learning confidence and mathematical attitude structural equation describes the relationship between latent variables such as mathematical attitudes, mathematical efficacy and mathematical anxiety.

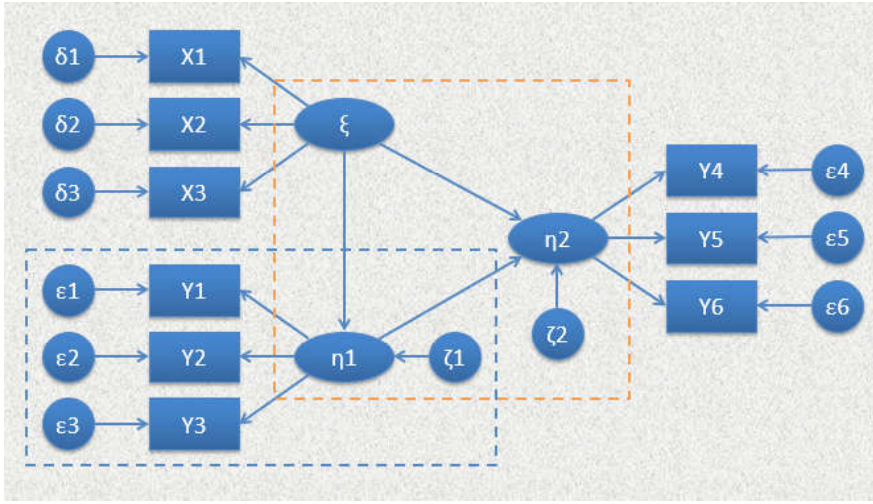

Figure 3. Structural Equation

The regression equation of the measurement models are as follows:

$$\mathbf{x_1} = \lambda_1 \xi_1 + \sigma_1$$
$$\mathbf{x_2} = \lambda_2 \xi_1 + \sigma_2 \; \mathbf{x_2} = \lambda_2 \xi_1 + \sigma_2$$
$$\mathbf{x_3} = \lambda_3 \xi_1 + \sigma_3$$
$$\mathbf{y_1} = \lambda_1 \eta_1 + \varepsilon_1 \; \mathbf{y_1} = \lambda_1 \eta_1 + \varepsilon_1$$
$$\mathbf{y_2} = \lambda_2 \eta_1 + \varepsilon_2$$
$$\mathbf{y_3} = \lambda_3 \eta_1 + \varepsilon_3$$

The matrix equation of the above regression equation are :

$$\mathbf{x} = \Lambda_x \xi + \delta$$

$$\mathbf{y} = \Lambda_y \eta + \varepsilon$$

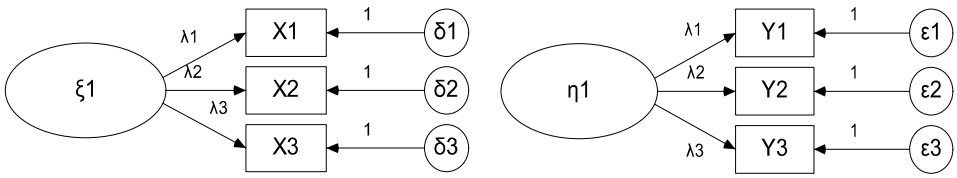

Figure 4. Measuring Model Regression Equation

The regression equation between latent variables of structural model are as follows:

$$\eta_1 = y_1\xi_1 + e_1$$
$$\eta_2 = y_3\eta_1 + y_2\xi_1 + e_2$$

The main task of identification is to consider whether each unknown parameter in the model can be obtained from the observed data as the only solution.

According to the relationship between the number of data points and the number of parameters, the model identification can be divided into: just identification, over identification, low identification.

Df = 1/2 k (k + 1) -t (number of data points = 1/2 k (k + 1), t is the number of free parameters and k is the number of observed variables)

If df> 0, excessive recognition. The result of the estimation is to allow rejection of the null hypothesis.

If df = 0, just identify.

If df <0, low recognition. That model estimates can not get the only solution.

AMOS is the abbreviation of Analysis of moment structure. AMOS can carry out a number of analysis of confirmatory factor analysis, path analysis, multiple sets of comparison. It makes SEM easier with the intuitive drag-and-drop plotting tool it has. It can quickly demonstrate path map custom models without programming (Huang *et al.*, 2015; Guo *et al.*, 2014). The most important feature of AMOS is that it has Full Information Maximum Likelihood when dealing with missing values. AMOS will not miss any situation even if the data is incomplete and will automatically calculate the correct standard errors and appropriate statistics to reduce the deviation of estimated values. Confirmatory factor analysis is a statistical analysis of social survey data. It tests whether the relationship between a factor and the corresponding measure is in accordance with the theoretical relationship of the researcher.

Analytic Hierarchy Process (AHP) is a hierarchical weight decision analysis method developed by Professor Satie, an American operation strategist at the University of Pittsburgh, in the early 1970s. It is used to build business complex, multi-objective decision-making, it has been applied to many management decisions. In this way, a complex system can be transformed into a hierarchical

system of elements. Using n elements of pairwise comparisons at each level of hierarchy, the value $\mathbf{m}_j^i \mathbf{m}_j^i$ is the decision assigned to the element $\mathbf{e}_i \mathbf{e}_i$ about the relative importance of $\mathbf{e}_j \mathbf{e}_j$. These comparisons make up a pairwise comparison matrix. To find the weight of each element or each alternative score, a priority vector (or eigenvector) of the comparison matrix $W = (W_1, W_2, \ldots, W_n)^T$ $W = (W_1, W_2, \ldots, W_n)^T$ is used. It is based on solving the equation: $MW = \lambda_{max} WMW = \lambda_{max} W$, $\lambda_{max} \geq n\lambda_{max} \geq n$. This shows that the matrix eigenvectors (λ_{max}) (λ_{max}) of pairwise comparisons corresponding to the largest eigenvalue reflect the relative importance of the determinant element. Only when the preferences of policymakers are consistent, the traditional AHP method can give a fairly good approximation. However, descriptions of linguistic variables (such as "judgments" or "preferences") are often vague and the decision maker's attitude towards language always implies ambiguity and diversity in the assessment process. So AHP is invalid when applied to ambiguous problems. Therefore, fuzzy sets can contain pairs of comparisons as an extension of AHP to solve this uncertainty.

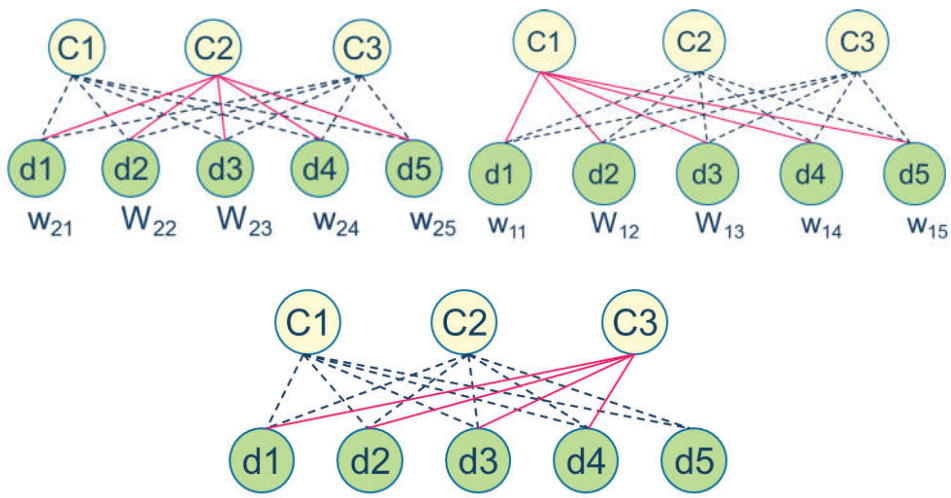

Figure 5. The Concept Map of AHP

Evaluation and Measurement

In this study, SPSS17.0 was used to analyze the reliability of 6 variables including formal knowledge governance and informal knowledge governance. Except for FKG (Cronbach'α = 0.674, close to 0.7), the Cronbach 'α for each variable was greater than 0.7. This shows that the questionnaire has good reliability. Using the AMOS 20. 0 for confirmatory factor analysis (CFA), the standardized coefficients for each of the factors were greater than 0.5 ($p < 0.001$) except for SOO1 (with a normalization factor of 0.471). Taking into account the reverse of this measurement item may have an impact on the normalization coefficient. This shows that the questionnaire has reached the validity requirement. The next table shows the test results of reliability and validity.

Table 3: Validity and Reliability Tests of Variables

Latent variables	Measurement items	Standardization factor	Alpha α
Formal knowledge governance	FKM 1	0.655	0.674
	FKM 2	0.775	
	FKM 3	0.547	
Informal knowledge governance	IFKM 1	0.710	0.827
	IFKM 2	0.789	
	IFKM 3	0.725	
	IFKM 4	0.733	
The Heterogeneity of the Teacher Team	HTT 1	0.660	0.732
	HTT 2	0.818	
	HTT 3	0.613	
The Sense of Belonging	SB 1	0.732	0.842
	SB 2	0.884	
	SB 3	0.812	
Innovative ecology in colleges	IEC 1	0.743	0.806
	IEC 2	0.873	
	IEC 3	0.650	

Note: The above normalization coefficients are all significant at the $p < 0.001$ level.

The study used AMOS20.0 to construct the structural equation of the model and tested whether the correlation coefficient was significant by path analysis. After examination, hypothesis H1, H2 is confirmed, model-related fitting indicators in *Table 4.*

Table 4. The Results of Path Coefficient Analysis

Path	Path factor	T	X^2	df	X^2/df	RMSEA	CFI
FKM→IEC	0.54	7.018	38.911	16	2.432	0.059	0.976
IFKM→IEC	0.58	8.726	34.892	22	1.586	0.038	0.981
FKM→HTT	0.65	6.517	14.740	13	1.134	0.018	0.990
IFKM→HTT	0.80	8.831	33.292	18	1.850	0.046	0.980

We use the Product of Coefficients Approach (Zaman et al., 2015) method for testing intermediary effects.

$$S_{ab} = \sqrt{b^2 S_a^2 + a^2 S_b^2 + S_a^2 S_b^2}$$

The model of mediating the role of the heterogeneity of the teacher team in formal knowledge governance and knowledge sharing is shown in the figure. The model fit index met the requirements. This model and the sample data fitting good. In the structural model after joining the heterogeneity of the teacher team, the path coefficient from formal knowledge management to the heterogeneity is 0. 18 (t = 2.093, P <0.05), which is slightly lower than before joining the sense of ownership; the ownership spirit to knowledge The shared path factor is 0.56 (P <0.001) (Hernandez & Corral, 2017). This shows that the heterogeneity of the teacher team plays a partial intermediary role between formal knowledge governance and knowledge sharing. Suppose H3 is supported.

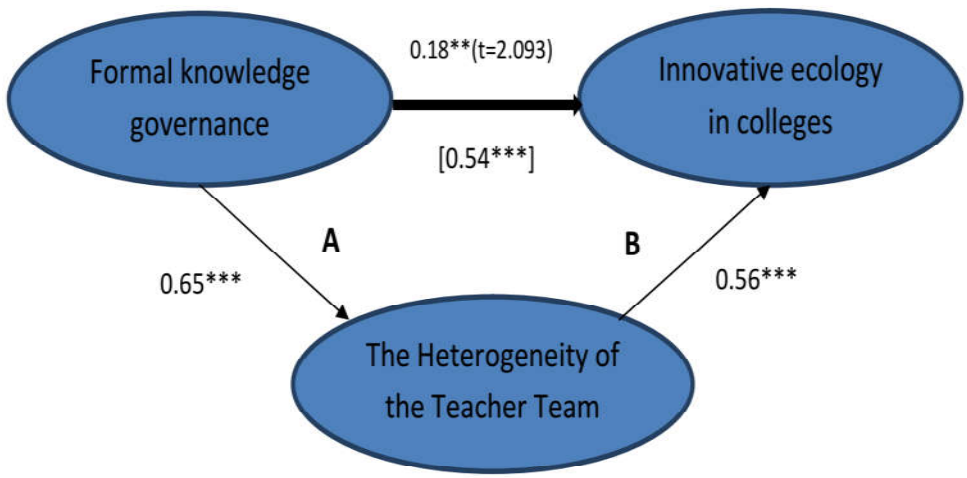

Figure 6: The Mediating Effect Test of the Heterogeneity of the Teacher Team (Model 1)

Note: ***means p <0.001.

The mediating role model of master-ship between informal knowledge governance and innovation ecology is shown in the figure. The model fit index met the requirements. This shows that the model and the sample data fitting good. The path coefficient of informal knowledge governance to the heterogeneity of the teacher team was 0.12 (t = 1.144, p> 0. 1) in the structural model after joining the ownership. The path coefficient of ownership to knowledge sharing is 0. 59 (p

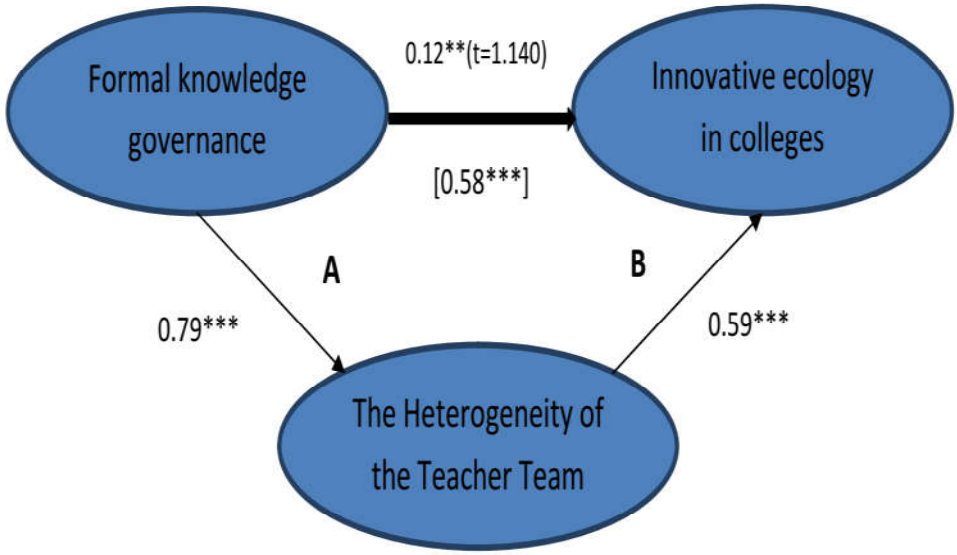

Figure 7. The Mediating Effect Test of the Heterogeneity of the Teacher Team (Model 2)

Note: ***means p <0.001.

In this study, a hierarchical regression analysis was used to test the regulatory effect, introducing two regulatory variables and their interaction with formal knowledge management and informal knowledge governance. We analyzed four regulatory regression models and the results are shown in Table 5. At this stage, in order to avoid the problem of multidisciplinary, we have performed a mean-center treatment on all the latent variables. The results of model 1 showed that the standardized regression coefficient of subject belonging was 0.354 (p <0.001). This shows that the sense of belonging has a positive impact on the innovation and ecological development of colleges (Obermeister, 2017). However, the interaction between formal knowledge management and subject belonging is not significant at the p <0.1 level. H5 is not supported. The standardized regression coefficient of subject attribution was 0.309 (p <0.001), while the interaction between informal knowledge governance and subject affiliation was significant at p <0.01. H6 is assumed to be supported.

Table 5. Model Summary Table

	Model 1	Model 2	Model 3	Model 4
Argument				
FKG	0.279***	0.122**		
IFKG			0.353***	0.259***
SB	0.354***		0.309***	
Interaction				
FKG×SB	0.043			
IFKG×SB			0.082*	
R^2	0.269	0.356	0.301	0.392

Note: *** means P＜0.001； ** means P＜0.05； *means P＜0.10.

Discussion

This research empirically studies the relationship between knowledge governance and the innovation and ecological development of colleges from a brand new perspective. First, it studies the impact of two dimensions of knowledge governance on the innovation and ecological development of colleges. Innovative ecosystem is of great theoretical and practical value for higher education faculty to improve their innovation ability and innovation performance. Innovative ecosystems have many attributes, including complexity, openness, integrity, interactivity, dynamics, stability, and hierarchy.

The article selected the Chinese domestic university teachers' team as a sample. From the perspective of knowledge governance, we discuss the relationship between knowledge governance and the development of innovative ecology in colleges and universities. Draw the following conclusions: First, the formal knowledge governance and informal knowledge governance respectively have a significant positive impact on the innovation and ecological development of colleges and universities. This further illustrates the need for governance of knowledge activities. Second, the heterogeneity of the teacher team has a partial intermediary role between formal knowledge governance and the innovative ecological development of higher education institutions. It has a fully mediated role between informal knowledge governance and the creative and ecological development of universities. The results show that the heterogeneity of the teacher team is very important in the knowledge management of university faculty team, follow-up study can be valued. Thirdly, the sense of discipline is not significant for the regulation of formal knowledge governance and the innovation and ecological development of colleges. This may be because formal knowledge governance focuses on organizational structure and mechanisms. When formal knowledge governance is used to stimulate innovation and ecological development, there is not much change in the emotional attributes of researchers (Frantzeskaki *et al.*, 2018). Therefore, the role of regulation is not obvious. The sense of belonging

has significant positive regulatory effect on informal knowledge governance and innovation -ecological development in higher education institutions.

Conclusion

Under the condition of the same external environment, the performance of the team divides greatly, which also explains the important role of the heterogeneity of the university faculty team from a practical point of view. Empirical data show that if the team can absorb high IQ complex talent to join, it will improve team performance. From the research context of knowledge governance, it can be found that knowledge governance has become the frontier of knowledge management research and has drawn the attention of many scholars. Knowledge governance mechanism not only directly affects the behavior integration, but also indirectly adjusts the behavioral integration by adjusting the knowledge potential. Organizations that have a good system and a harmonious atmosphere make the organization more willing to exchange ideas. This can promote the development of higher education and create a good situation of innovation-ecology in colleges and universities. Knowledge governance mechanism not only directly affects the performance of knowledge governance, but also indirectly adjusts the performance of knowledge governance by adjusting knowledge potential and behavioral integration. Good governance mechanism provides effective system guarantee and cultural atmosphere for organizing knowledge activities among members. It improves the level of organizational knowledge by improving the effectiveness of behavioral integration. This will make the contingent of faculty members in colleges continue to develop in modern society and the innovation and ecology of colleges and universities are getting better and better.

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