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Empirical Research on Teaching Knowledge Sharing in University Town and Its Influential Factors

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Abstract: The implement of knowledge sharing in University Town facilitates to aggregate education resource and improve overall strength of University Town. According to factors and performance of teaching knowledge sharing in University Town, the model and theoretical hypothesis of teaching knowledge sharing in University Town are proposed. Questionnaire and structural equation model are used to empirically study teaching knowledge sharing model in University Town. The results indicate that three factors including the characteristics of knowledge, the cluster of University Town and the system and mechanism for University Town have a significant correlation with teaching knowledge sharing in University Town, while teaching knowledge sharing in University Town has a significant correlation with Knowledge Innovation, comprehensive strength and education quality of University Town. By analysis results, effective strategies are designed for knowledge sharing mechanism in University Town.

Keywords: University Town, teaching knowledge sharing, empirical research, structural equation model

1. INTRODUCTION

In recent years, the new development form of higher education-University Town has appeared. Construction of university town is a need to promote the popularization of region higher education, and it is the effective way to achieve the higher education system innovation and to improve the comprehensive strength of higher education. In China, the university towns show the characteristics of diversified construction mode, intensive spatial layout, and the oversized building scale [1]. Many problems exist in Chinese university town, such as the development, strategy and other aspects. For example, resource sharing (especially Knowledge Sharing) in University Town and opening to each other is not enough, cooperation among the colleges in the university town is scarcity, the equipment and human resources are underutilized, the potential to reduce the cost of education has not been excavated, and so on [2].

University Town is the gather of higher education institution. It also can be called University Cluster [3]. If regarded as a collection of higher education institutions, university town is a typical knowledge-intensive organization. Knowledge sharing in University Town refers to the knowledge sharing between the teachers and the students in other universities by all kinds of exchanging, and changing into the wealth of knowledge of the whole university town, promoting the continuous delivery and innovation of the knowledge in university town. The knowledge in university town can be divided into Research Knowledge and Teaching Knowledge [4].

In this paper, based on the basic theory, factors and performance of teaching knowledge sharing in University Town is proposed. And further study from the Empirical Research, and then targeted recommendations of Knowledge Sharing in University Town are proposed.

2. RESEARCH HYPOTHESES

There are many influencing factors affecting knowledge sharing, such as the characteristics of the

knowledge, organizational scenarios, associated factors, the characteristics of the receiving party, shared environmental factors and so on. Ren Yan (2006) generalized the influencing factors of Knowledge Sharing in University at home and abroad, and got mainly commentary about influencing factors of knowledge sharing from its content, process, role, motivation, Characteristics of the Knowledge and so on^[5]. Bao Gongmin (2007) generalized the reasons of knowledge sharing which has been explored till now into knowledge characteristics, individual characteristics, organizational characteristics, and environmental characteristics and so on^[6]. Shi Jiangtao (2007) roughly divided influencing factors affecting knowledge sharing into main factors, associated factors, knowledge factors, shared environmental factors^[7]. Jiang Jianying (2005) investigated the influencing factors of knowledge sharing between the Research and Development Alliance from the strength of the technical resources of the partners, organizational learning ability, technical knowledge barriers properties, compatibility between the partners^[8].

2.1 The influence from the characteristics of knowledge

According to the knowledge characteristics of university town, several aspects such as the exploitation level of knowledge, hidden levels, complexity of knowledge, expressiveness of knowledge, sharing in knowledge and similarity of knowledge are chosen to discuss the influential factors of teaching knowledge sharing in university town. Then propose as following:

Hypothesis 1: The characteristics of teaching knowledge in university town affect the sharing level of teaching knowledge in university town.

2.2 The influence from the cluster of University Town

University towns generally are the regional gathering of some universities and reach a certain size. These universities are close proximity in location. The geographical and spatial clustering made the cooperation between universities closer. The procedure and practices between each other produced the relatively stable trading relationship. The uncertainty of the transaction has reduced, and the transaction costs are also reduced. Geographical and regional agglomeration of the universities in university town produces the same or similar social and cultural backgrounds and institutional environment. This kind of culture identity helps the overall knowledge diffuse and share in university town. According to the cluster of University Town, several aspects such as geographical agglomeration, complementary of the resource, cultural convergence, symbiotic and cluster model are chosen to discuss the influential factors of teaching knowledge sharing in university town. Then propose as following:

Hypothesis 2: The clusters of University Town affect the sharing level of teaching knowledge in university town.

2.3 The influence from the systems and mechanism

Under the conditions that the universities are gathering in university town, related systems and the mechanism are used, trust between the universities is enhanced, and excellent cultural atmosphere of knowledge sharing is produced in university town, and then the desire of knowledge sharing in universities will be enhanced, so that they will have more willing to share their knowledge and technology with other members in university town. If knowledge sharing in university town achieves, reasonable distribution mechanism of benefits between the universities is needed to develop. Make improve knowledge sharing incentives, promote knowledge resources of university town ordered transfer and exchange, and improve efficiency of knowledge sharing in university town. Several aspects such as trust mechanisms, incentives, Area (cluster) cooperation mechanism, communication and exchange mechanism, leadership and policy support mechanisms and benefit distribution mechanisms are chosen to discuss the influential factors of teaching knowledge sharing in university town. Then propose as following:

Hypothesis 3: the systems and mechanism of university town affect the sharing level of teaching

knowledge in university town.

2.4 The influence on knowledge Innovation in university town from teaching knowledge sharing

Knowledge Innovation refers to the process of getting new basic science knowledge and scientific knowledge by scientific research. The purpose of knowledge Innovation is pursuit of new discovery, exploring new laws, creating a new method and accumulating of new knowledge. Knowledge Innovation provides the new theories and methods for people to understand of the world and transform it and provides inexhaustible motive force for people to realize the progress of human civilization and social development. Knowledge Innovation has four aspects characteristics, such as creativity, invention, novelty and innovative. Knowledge sharing in university town will integrate the superior resources of the universities in university town, and strengthen creating of interdisciplinary, and continue to promote knowledge innovation. The affect on knowledge Innovation in university town from knowledge sharing can be measured from the level of innovation of basic research in university town, the level of innovation of scientific research and the level of innovation of teaching Knowledge in university town. Then propose as following:

Hypothesis 4: the level of teaching knowledge sharing in university town affects knowledge Innovation in university town.

2.5 The influence on comprehensive strength of university town from teaching knowledge sharing

Some people such as Mei Hong (2004) built the comprehensive strength evaluation index system of university form the reputation of the school, faculty, teaching facilities, personnel training, scientific research efficiency^[9]. Zhou zhiying (2005) believed the factors of the comprehensive strength of university include as the reputation of the school, faculty, teaching facilities, personnel training, scientific research efficiency, academic standards and so on^[10]. The comprehensive strength of university town can be expressed as the reputation of university town, faculty of university town, interdisciplinary construction and education quality resources and so on. Implementing of knowledge sharing in university town must integrate the superior knowledge resources, and the comprehensive strength of university town can be promoted from reputation of university town, faculty of university town, interdisciplinary construction and education quality resources and so on. Then propose as following:

Hypothesis 5: the level of teaching knowledge sharing in university town affects comprehensive strength of university town.

2.6 The influence on education quality of university town from teaching knowledge sharing

Pan Maoyuan (2000) believed quality of education refer to “the level of education and the degree of effect”, and “ultimately reflected in the quality of training objects”^[11]. Guo Xiuqin (2007) believed that the quality of high education as the quality of the whole high education system should include quality of personnel training, school conditions and the quality of social services. These three qualities are three important elements of overall quality of higher education^[12]. Education quality of university town can be expressed as quality of personnel training in university town, university town school conditions, innovation capability of the students’ in university town and university town social services and so on. Implementing of knowledge sharing in university town must integrate the superior knowledge resources. By mean of knowledge exchange, transfer and innovation in university town, the education quality of university town can be promoted from quality of personnel training in university town, university town school conditions, innovation capability of the students’ in university town and university town social services and so on. Then propose as following:

Hypothesis 6: the level of teaching knowledge sharing in university town affects the education quality of university town.

2.7 Model Construction of teaching knowledge sharing in university town

Based on above analysis and assumptions, according to above 6 hypotheses, Model Construction is built as

Figure 1, which needs further empirical test.

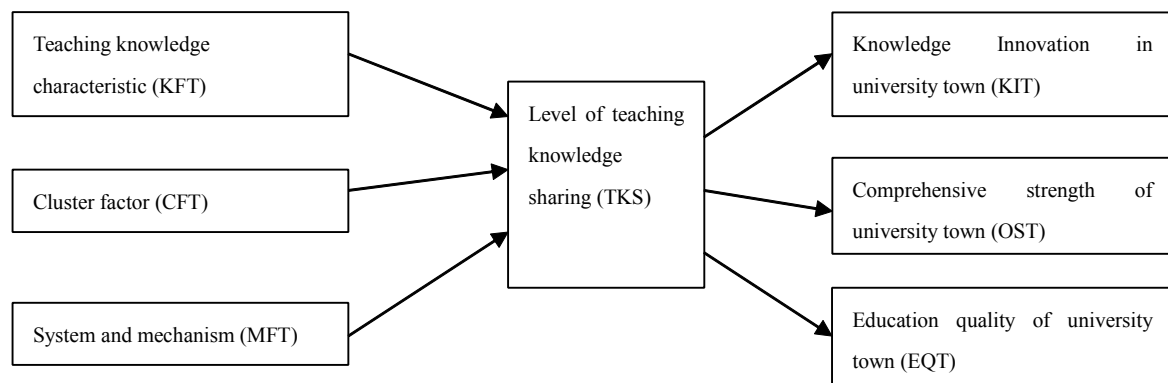


Figure 1 The measurement model of teaching knowledge sharing in University Town

3. QUESTIONNAIRE DESIGN AND EMPIRICAL METHOD

3.1 Questionnaire

After summarizing numerous literatures and depth interviews, this questionnaire was formed. According to the test results of the small samples, this questionnaire was revised, and then the final official questionnaire is formed. Big sample research was developed in the university town teachers in Shanghai, Beijing, Jiangsu and Zhejiang. The research is mainly by paper questionnaire and Email questionnaire. 500 questionnaires were delivered, and 374 valid questionnaires were recovered, response rate is 74.8%.

3.2 Choice of empirical method

Structural equation modeling (SEM) has the good points that it can deal with several dependent variables at the same time, and allow the independent variables and the dependent variable with measurement error, and can estimate the factor structure and factor relations at the same time, and allow the greater flexibility. In recent years, it has been used extensive in empirical research. LISREL8.70 is used in modeling structural equation, and SPSS17.0 is used in other statistical analysis of data.

4. EMPIRICAL SCHEME AND RESULT

4.1 Reliability analysis

Cronbach α is used to test the reliability. By analyzing with SPSS17.0, the result shows that Cronbach α of all the variable is more than 0.7, the total Cronbach α of the questionnaire is 0.926. So it can get that there is stronger correlation between the corresponding variables of every factor, and the questionnaire has high reliability.

Table 1. Reliability analysis of the questionnaire

Latent variable	The number of questions	Cronbach α
Teaching knowledge characteristic (KFT)	4	0.808
Cluster factor(CFT)	4	0.775
System and mechanism(MFT)	8	0.887
Knowledge Innovation in university town (KIT)	3	0.868
Comprehensive strength of university town (OST)	4	0.800
Education quality of university town (EQT)	3	0.830
The total Cronbach α of the questionnaire	26	0.926

4.2 Validity analysis

Exploratory factor analysis and confirmatory factor analysis is used to test the validity. Factor loading of the corresponding variable which is produced by each factor is tested by exploratory factor analysis. In this questionnaire, the factor loading of all the observed variables is more than 0.6. So each factor has stronger explanatory power to corresponding latent variable, and the questionnaire has higher quality. The result of confirmatory factor analysis is showed in Table 2, and all the variable show the good convergent validity and differentiation validity, so the questionnaire has good structure validity.

Table 2. Confirmatory factor analysis of the questionnaire

Index	Influencing factors model	Performance model
χ^2/df	2.85	3.31
GFI	0.91	0.91
AGFI	0.90	0.89
RMSEA	0.070	0.079
NFI	0.95	0.94
IFI	0.96	0.95
CFI	0.97	0.95

4.3 Structural equation modeling analysis

According to the hypothesis and variables structure measuring, and by setting the path model parameters of the latent variable factor which need to estimate, and then programming and running related analysis procedures, after standardization, the model of teaching knowledge sharing in University Town can be obtained as show in Figure 2.

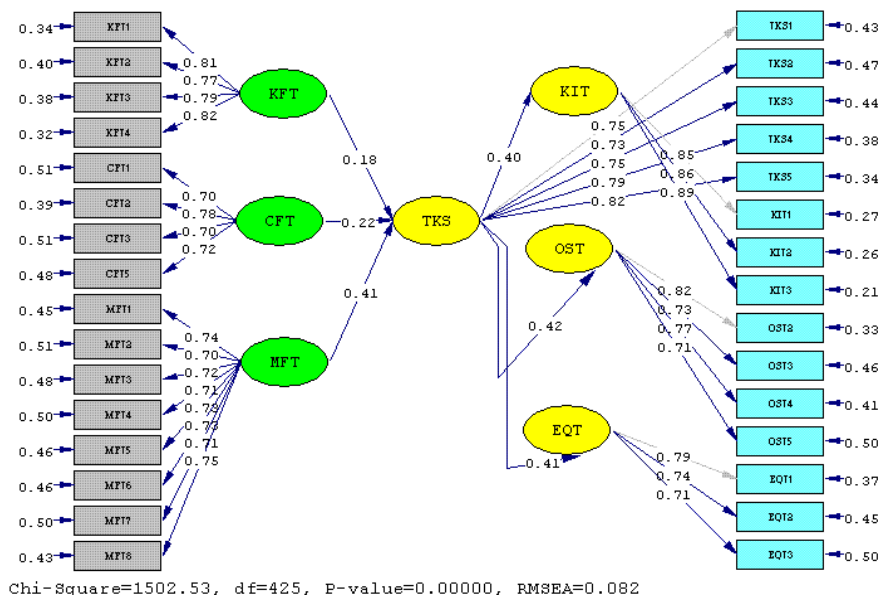


Figure 2 Test for model of teaching knowledge sharing in University Town

The operating result of the model is showed in Table 3. According to “The Thumb Rule” which is used to judge the fitting goodness of structural equation modeling, 6 indexes can show higher fitting goodness of the

model, and 2 indexes can show common fitting goodness of the model. So the model can be fully accepted.

Table3. Goodness of Fit Statistics for model of teaching knowledge sharing

χ^2	df	χ^2 / df	RMSEA	GFI	AGFI	RMR	NFI	IFI	CFI
1502.53	425	3.54	0.082	0.80	0.76	0.036	0.90	0.93	0.93

4.4 Hypothesis test

The ultimate goal of the empirical analysis is to test the empirical data which is assumed in proposition. The empirical result of the hypothesizing relationships in the proposition can respectively show in the path coefficient estimating of each latent variable factor. The standardize path coefficient of teaching knowledge sharing in University Town can be show in Figure 3.

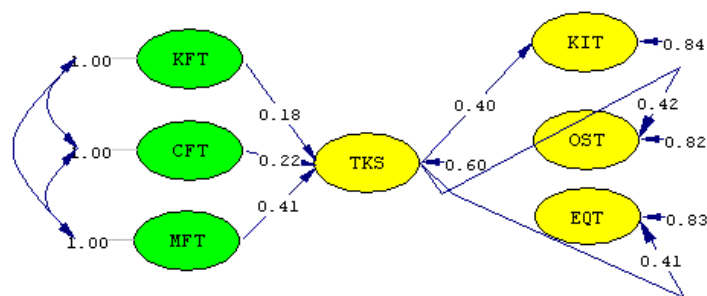


Figure 3 The standardize path coefficient of teaching knowledge sharing in University Town

Table4. The path analysis and hypothesis test of teaching knowledge sharing model

Relationship path	Standardized coefficients	Value of t	Evaluation of statistics	Hypothesis testing result
KFT→TKS	0.18	3.01**	significant	H1: support
CFT→TKS	0.22	3.47***	significant	H2: support
MFT→TKS	0.41	6.92***	significant	H3: support
TKS→KIT	0.40	6.94***	significant	H4: support
TKS→OST	0.42	7.01***	significant	H5: support
TKS→EQT	0.41	6.50***	significant	H6: support

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Through the empirical research on knowledge sharing model of University town show that: teaching knowledge characteristics of University Town, cluster factor of University Town, systems and mechanisms and performances of University Town has a significant positive impact on teaching knowledge sharing level of University town. System and mechanism of University town has the greatest impact on teaching knowledge sharing level of University town. The sharing level of teaching knowledge in University town has a significant positive effect on knowledge Innovation in university town, comprehensive strength of University town and the education quality of university town. The sharing level of teaching knowledge in University town has a roughly equal effect on knowledge Innovation in university town, comprehensive strength of University town and the education quality of university town.

5.2 Recommendations

According to the empirical conclusions of this paper, in order to improve the level of teaching knowledge sharing in University City, some measures can be taken from the following aspects: (1) to strengthen the mechanism construction of knowledge sharing in University Town, to design the win-win mechanism of knowledge sharing in University Town, including the regional cooperation mechanism, incentive mechanism, interest distribution mechanism, learning mechanism. (2) to strengthen trust, cooperation and communication between the University town, to reduce the cost of knowledge transfer and knowledge sharing, to increase the knowledge flow velocity. (3) because each university in University town all have rich knowledge resources, need to establish a university city knowledge sharing platform, so that the university in the university town can easily obtain and share the needed knowledge, to integrate the advantage knowledge resources of each university, Continue to innovation the knowledge of the university town. (4) to establish the University Town campus culture which is harmonious and conducive to knowledge sharing, and create an unified campus culture atmosphere in university town.

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