Relationship of Local University on Intellectual Capital Transformation in Zhejiang, China

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Abstract

The intellectual capital transformation is the important embodiment of social service function and important carrier. This research was set in 2 research questions, what were the current situation of local universities in Zhejiang China which intellectual capital transformation in, and how could innovates local university be more relationship for intellectual capital transformation. These were into two research objectives to finding out the situations of local university which relationship to intellectual capital transformation, and finding out more relationship to create local university be more effective for intellectual capital transformation**,** With the research methodology, in quantitative methods, The results from this study found the positive relationship on the related local university relationship on the structure capital and human capital of the enterprises' intellectual capital is significantly higher than that of the transactional collaboration relationship, and the related relationship has a strong positive impact on enterprises' relationship capital, however, transactional relationship have little positive impact on enterprises' relationship capital.

Keywords: Local University; Intellectual Capital; Transformation

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Introduction

Nowadays the world is becoming a knowledge-based society; the storage and application of knowledge is the basis for economic growth and capital accumulation (Nonaka & Takeuchi, 1995). As the core knowledge of the enterprise, intellectual capital is the key resource of the core competitiveness and competitive advantage of the enterprise.

There are many universities in Zhejiang province. In recent years, through the industry-university collaboration, the innovation ability of the enterprises, especially the high-tech enterprises has been greatly improved, and has become one of the famous economic provinces in China.

This study combines the research results with the specific regional environment, enriches the theory of industry-university synergy and intellectual capital, and provides a reference for local governments to formulate targeted science and technology innovation policies.

Research Questions

1. What are the current situations of local university which relationship on intellectual capital transformation in Zhejiang ?

2. How can innovates local university be more relationship for intellectual capital transformation in Zhejiang?

Research Objectives

1. Finding out the situations of local university which relationship to intellectual capital transformation in Zhejiang

2. Finding out more relationship to create local university be more effective for intellectual capital transformation in Zhejiang

Research Hypothesis

H_1 Related relationship of local University on Intellectual capital transformation has a significant

H2 Transactional relationship of local University on Intellectual capital transformation has a significant

Research Methodology

Research Design

This research was designed as a quantitative research using survey questionnaire as the main tool to collected primary data from the sample groups.

Population and Sample

The population of this study are people who are stakeholders of the industry-university collaboration includes entrepreneurs or senior managers who have a comprehensive understanding of enterprise-industry-university collaboration activities amount of 9,047 persons. And used Yamane formula for determining the sample size as given by:

$$n = \frac{N}{1 + Ne^2}$$

Thus, the sample size was 383 samples.

Data Collection Method

This research used a semi-structured survey questionnaire as a method to collect primary data from the samples. The questions in the questionnaire were developed following the concepts in relationship of local university on intellectual capital transformation.

Data Collection

There were 105 colleges and universities in Zhejiang Province (Zhejiang Education Department Statistics 2018). The author obtained the name lists of the hi-

tech enterprises that have collaboration projects with universities from the universities in Zhejiang province which include Hangzhou, Ningbo, Shaoxing, Jiaxing and Wenzhou.

Data Analysis

The data was analyzed using One-way ANOVA, linear multiple regressions to further verify the causal relationship between industry-university collaboration and enterprises' intellectual capital.

Research Finding and Discussion

Descriptive Analysis

In order to have an intuitive understanding of all aspects of related relationship, transactional relationship and intellectual capital, a descriptive analysis was presented;

Item	Mean	SD	Level
Related Relationships	3.41	.52	High
Transactional Relationships	3.47	.52	High

The table above was showed the descriptive analysis of the relationship between the related, the transactional and the various aspects of intellectual capital. The average value could be used to know the level of each variable. It could be seen that each variable was around 3.44. It showed that all aspects of the related relationship, transactional relationship and intellectual capital were at a high level.

One-way ANOVA Analysis

In order to study whether there are significant differences in the aspects of local university's administrative differences, One-way ANOVA analysis of variance was performed;

Relationship Type	Group	Sum of Squares	df	Mean Squares	F	Sig.
Related Relationship	Between Groups	30.520	6	5.087	25.873	.000***
	Within Groups	78.442	399	.197		
	Total	108.961	405			
Transactional Relationship	Between Groups	32.857	6	5.476	28.161	.000***
	Within Groups	77.590	399	.194		
	Total	110.447	405			

*Sig < 0.05, **Sig < 0.01, ***Sig =.000

In order to study whether there are significant differences in various aspects among people in different local university, One-way ANOVA was carried out;

Relationship Type	Group	Sum of Squares	df	Mean Squares	F	Sig.
Related Relationship	Between Groups	2.109	8	.264	.979	.452
	Within Groups	106.852	397	.269		
	Total	108.961	405			
Transactional Relationship	Between Groups	2.072	8	.259	.949	.476

Within Groups	108.376	397	.273	
Total	110.447	405		

In order to study whether people with different years of establishment have significant differences various aspects, One-way ANOVA was carried out;

Relationship Type	**Group**	**Sum of Squares**	**df**	**Mean Squares**	**F**	**Sig.**
Related Relationship	Between Groups	25.758	3	8.586	41.483	.000***
	Within Groups	83.204	402	.207		
	Total	108.961	405			
Transactional Relationship	Between Groups	29.843	3	9.948	49.611	.000***
	Within Groups	80.605	402	.201		
	Total	110.447	405			

In order to study whether there are significant differences in the local university's annual sales income revenue in various aspects, One-way ANOVA analysis of variance was performed;

Relationship Type	**Group**	**Sum of Squares**	**df**	**Mean Squares**	**F**	**Sig.**
Related Relationship	Between Groups	1.731	5	.346	1.291	.267

	Within Groups	107.230	400	.268		
	Total	108.961	405			
Transactional Relationship	Between Groups	1.548	5	.310	1.137	.340
	Within Groups	108.899	400	.272		
	Total	110.447	405			

*Sig < 0.05, **Sig < 0.01, ***Sig =.000

In order to study whether there are significant differences in various aspects of people with different years of employment, One-way analysis of variance was performed;

Relationship Type	**Group**	**Sum of Squares**	**df**	**Mean Squares**	**F**	**Sig.**
Related Relationship	Between Groups	.320	3	.107	.395	.757
	Within Groups	108.641	402	.270		
	Total	108.961	405			
Transactional Relationship	Between Groups	.959	3	.320	1.174	.319
	Within Groups	109.488	402	.272		
	Total	110.447	405			

Research Findings

The results from descriptive analysis found that most of the high-tech enterprises in Zhejiang province are private enterprises with a wide industry distributed. The results found related local university relationship has a positive impact on intellectual capital (assuming H_1 was established).

It could be concluded that transactional industry-university collaboration relationship has a positive impact on human capital and structure capital (assuming H_2 was partially passed)

The results from this study found the positive relationship on the related local university relationship on the structure capital and human capital of the enterprises' intellectual capital is significantly higher than that of the transactional collaboration relationship, and the related relationship has a strong positive impact on enterprises' relationship capital, however, transactional relationship have little positive impact on enterprises' relationship capital.

Hypothesis Verification Results of the Relationship local University on Intellectual Capital

	Hypothesis	Result
H_1	Relationship between universities and enterprises have a significant influence on the enterprises' intellectual capital	Accepte
H_2	Transactional relationship between universities and enterprises have a significant influence on the enterprises' intellectual capital	Partially Acc

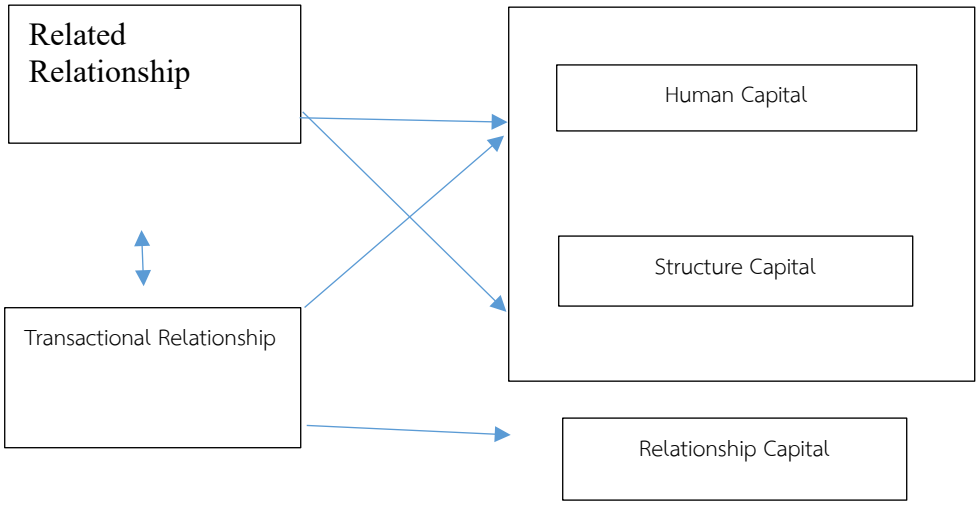
Conclusions and Recommendations

Taking Zhejiang area as an example, this paper analyzes the factors affecting the intellectual capital of transformation from the aspects of related relationship and transactional relationship between local universities.

5.1 Conclusions

The results from the empirical analysis of the relationship of local university

on enterprises' intellectual capital. The results found that construction of the related relationship based industry-university collaboration relationship can effectively promote the accumulation of intellectual capital.



Research Implication

The conclusions of this paper may be an innovation in the development of the concept of local university relationship in the field of intellectual capital. In terms of research content, local university relationship is mainly limited to issues such as strategy and organizational management, dynamic mechanism, and collaboration barriers.

This paper proves through empirical research that at the current stage, the local university relationship is the key factor affecting the innovation of enterprise intellectual capital.

Finally, it puts forward a specific solution to build a related local university relationship and promote enterprise intellectual capital innovation in the current environment.

Recommendations for Future Research

Firstly, the data obtained by this research are mainly concentrated in the

engineering disciplines with relatively close relationship between local university.

Then, local university relationship on enterprises' intellectual capital may be related to the nature of the enterprise, the type of university and the way of relationship.

Finally, it is hoped that the latter researchers can expand the sample size on the one hand and expand the research area on the other hand, making the research sample more applicable.

References

Bingying Li.(2017). Individual, cluster, and the analysis of the factors affecting knowledge transfer between organizations. *Journal of intelligence science*.10: 1459-1461.

Chairman, J.P.Homburg, C.(2018). Buyer-seller relationships and customer firm costs. *Journal of Marketing*.65 (1):293.

Chao Liu, Yosha.(2018). Stage financing and the role of convertible securities. *London Business School*. IFA Working Paper No. 253-1997.

Chen Jin, Yufen Chen.(2018).Research on enterprise technology innovation performance evaluation index system [J]. *Science of science and technology management*. 27(3): 86-91.

D'Este, Patel.(2017). Commercial knowledge transfers from universities to firms: improving the effectiveness of university-industry collaboration. *High Technology Management Research*.(14):131-I33.

Fontana, Matt.(2016). Supplier relations and supply chain performance in financial services processes. *International Journal of Operations & Production Management*. 28 (2): 185-206.

Gongxia Qin.(2017). Based on the employee trust enterprise knowledge sharing research. *Journal of management science, and science and technology.* (I0): 103-105.

Guilong Zhu, Kuiyan Li.(2018).Analysis of factors influencing the performance of

industry-university collaboration [J].*Science and technology management research*, 4:90-91.

Haijian Liu,et al.(2017). Measuring Innovative Performance: Is There an Advantage in Using Multiple Indicators. *Research Policy*, 32(8): 13-65.

Haowen Jie,et al.(2018). Firms in Networks: A New View of Competitive Power. *Stockholm: Business and Social Research Institute*.142.

Herong Zhou, Peng Zhang.(2018). Informal tacit knowledge transfer mechanism in the organization. *Journal of scientific research management*.(5).

Howells, Park C S.(2016). Multistage capital investment opportunities as compound real options. *The Engineering Economist*. 47(1):1-27.

Janet E L, ect.(2017). Fishing upstream: Finn innovation strategy and university research alliances. *Research Policy*. (7): 930-948

Joia.(2018). The dynamic economic engine at Silicon Valley and US Government programs in financing innovations. *Innovation*. 26(9): 1081-1089.

Kodama.(2018). University-industry collaborations in Japan: The role of new technology-based firms in transforming the National Innovation System. *Research Policy*.(5):583-594.

Kwen Kong chang, Ammon Salter.(2018). Searching high and low: what types of firms use universities as a source of innovation? *Research Policy*.(8):1201-1215.

Meigun Zhang.(2016). Success Breeds Success: The Linkage Between Relationship Intensity and Tangible Outcomes in Industry-University Collaborative Ventures. *The Journal of High Technology Management Research*.11(2) : 255-273.

Roberto Fontana, etc.(2016). Factors affecting university-industry R&D projects: The importance of searching, screening and signaling. *Research Policy*. (2): 309-323.

Ruoyu Lu, Zhang Peng, Hongqi Zhang.(2017). Research on industry-university

collaboration model. *Science Research*. (2):186-193R.

Sanyi Wang, Tieshan Xie.(2017). Knowledge transfer between enterprises influence factor analysis. *Journal of zhongzhou*. 2: 55-60.

Serenko, Trigeorgis L.(2016). Multi-stage Real Options: The Cases of Information Technology Infrastructure and International Bank Expansion. *The Quarterly Review of Economics and Finance*. 38(Special issue): 675-692.

Shijun Chen, Zhiming Cui.(2017). The characteristics of the tacit knowledge transfer and pattern analysis. *Journal of dialectics of nature*. 2: 62-68.

Song Chen, Sheng wang.(2018).Specialization and transaction cost: economic analysis of national innovation system. *Scientific research*. (1):210-214

Tianying Jiang, Junjiang Wang.(2018). Studying organizational culture through rites and ceremonials. *Academy of Management Review*. (9):653-669.

Tianying Jiang (2018). Trust between enterprises in knowledge alliance influence on knowledge sharing. *Journal of intelligence science*.(2):73-78.

Toshi Doko Chosa.(2016). Japanese Venture Capital Association.*Survey of Japanese Venture Capital Investment*.710-723.

Toshihiro Kodama.(2018). The role of intermediation and absorptive capacity in facilitating university-industry linkages-An empirical study of TAMA in Japan. *Research Policy*. 37(8): 1224-1240.

Wei Yao.(2018). Enterprise knowledge assets the behavior of the structure and the pattern choice. *PhD thesis, xi 'an jiaotong university*.432-433.

Xuai Ping.(2017). Intellectual capital and financial performance banks[J].*Journal of Intellectual Capital*.(4):515-530.

Yanhong Yao, et al.(2018). Technology transfer and the research university: a search for the boundaries of university-industry collaboration. *Research Policy*. 25(6): 843-863.

Yuming Wu, Lei Li.(2018). Knowledge transfer characteristic research. *System engineering theory and practice.*10:8-11.