

An Empirical Study about Innovation of Enterprise Technique and Culture Integration Impacting on the Access to Resources

(SUBMITTED BUT NOT PRESENTED)

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Abstract—Creative enterprises have widespread problem of insufficient resources, whether the resource dilemma can be resolved through enterprise innovation of technological and cultural integration in the end is an important issue. Animation and game industry is a typical field of technology and culture integration of innovation, and this research did an empirical study by sampling 129 Chinese animation and game companies after literature analysis, and its results confirmed: innovation of technological and cultural integration cannot bring resources directly to enterprises, but by the way of intellectual capital and organization legitimacy increase, it can obtain resources for enterprises, namely intellectual capital and organizational legitimacy are the two paths of enterprise to obtain resources through innovation of technology and culture integration. This study find a theoretical basis for enterprises to adhere to the innovation of technological and cultural integration in the Chinese "public business" context.

Keywords—*technology and culture integration; intellectual capital; organizational legitimacy; access to resources*

I. INTRODUCTION

Technological and cultural creativity nowadays is the twin engines of economic development, the development of deep cross-border integration of both and their multiple effects, are the powerful impetus to the rapid development of emerging enterprises. Currently, cultural and creative industries promoted by the world's next generation of mobile Internet, big data, cloud computing, a new generation of audio-visual equipment and digital entertainment technology etc. is creating more than 30 billion dollar every day, in 2014, China's animation industry exceeded 100 billion and the output value of online games is over 110 billion. China has made "technology and cultural integration and development" as a national strategy, and developed a lot of policies. However, the exploration and research of technological and cultural integration on the micro level is still relatively rare. This paper introduces "organizational legitimacy" in the "system-based view" and "intellectual capital" in the "Basic Resource View" as two variables, focuses the impact of

technological innovation and cultural integration on enterprise resource acquisition from the corporate level.

II. LITERATURE AND HYPOTHESIS

A. Literature

Penrose (1959) thought company should be defined as "resource collection coordinated by an administrative framework and defined the boundaries"[1], Successful companies often creatively use limited resources, play leverage of existing resources and require greater access to enterprise resources. Technological and cultural integration and innovation belong to an innovative way of creative use, the interaction between technology and culture, can change the way of cultural experience, expand demand for cultural consumption, enrich cultural factors of production, improve quality of culture constitute, enhance cultural transmission capacity, improve culture storage effects; on the contrary, culture can malleable applications and content of science and technology, enterprise, can introduce more cultural connotation and technology elements of a new product or service by innovation of science and technology and culture integration. Yang Xiaoming et al. (2009)[2] study confirmed that scientific and technological innovation could increase the intellectual capital, such as obtaining a new patent, copyright and trademark. From the perspective of basic resources view, intellectual capital has leverage effect which can get more resources for enterprises (Li Jianliang, 2014)[3]. Organizational legitimacy of sociological concept is the basis of "system-based view", and it's different from legislation in the legal sense, organizational legitimacy (Legitimacy) refers to general perception and assumptions which the main behavior is expected, and proper or appropriate in some socially constructed systems consisting of the norms, values, beliefs and definitions (Suchman M.C., 1995)[4].

B. Hypothesis H_1 and H_2

Li Jinghua et al. (2014)[5] and other studies found that enterprise innovation has positive effect on organization

legitimacy, but there is no mention of this effect of technological and cultural integration of innovation. Therefore, this study proposes hypothesis H_1 :

H_{1a} : Innovation of technology and culture integration has a positive effect on intellectual capital;

H_{1b} : Innovation of technology and culture integration has a positive impact on access to resources;

H_{1c} : Innovation of technology and culture integration has a positive impact on organizational legitimacy.

Intellectual capital as the core resource of enterprises, human capital, structural capital and relational capital also have significant influence on legitimacy and access to resources of the enterprise (Wang Wei et al., 2014)[6], thus this study proposes hypothesis H^2 :

H_{2a} : Intellectual capital has a positive effect on the legitimacy of the organization;

H_{2b} : Intellectual capital has a positive impact on access to resources.

C. Hypothesis H_3

Enterprises can affect the legality of the allocation of resources, "high legitimacy" of the enterprise means more in line with the expectations of the outside world, for example, animation and game companies if they can get certain conditions (legal system), can get certain tax incentives or subsidies, "high cognitive legitimate" of the business are more attractive to the favor of customers and other investors, organization legitimacy can help companies obtain the necessary growth resources (Zimmerman & Zeitz, 2002)[7], therefore, this study proposes proposition hypothesis H_3 :

H_3 : Organizational legitimacy has a positive to influence on the enterprise resource acquisition.

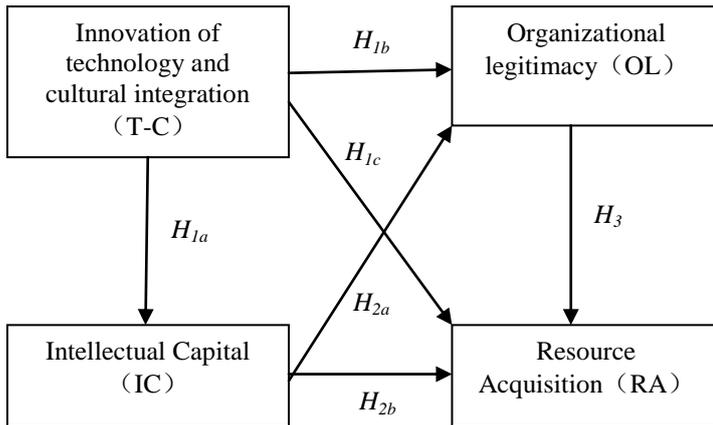


Figure 1. Model of enterprise technological and cultural integration of innovation impacting on access to resources

III. METHODOLOGY

This study samples Guangzhou, Shenzhen, Beijing, Xiamen, four cities where animation and game industry is relatively concentrated. Through trade associations and government departments.

A. Survey statistics

we elected 250 enterprises as the investigation unit, through animation and game show in Guangzhou, Beijing animation Training Seminar (Ministry of Culture of China) and e-mail, 245 questionnaires were distributed and answered by the enterprise high tube or company representative, 154 were recovered, excluding invalid questionnaires 25 parts, there are 129 valid questionnaires and 116 effective sample corresponding business (a small number of companies fill in 2 parts). Among effective sample enterprises, state-owned enterprises accounted for 10.3%, private enterprises accounted for 73.2%, other enterprises accounted for 16.5%.

B. Variable

Questionnaire design uses Likert5 point scale, evaluated by the respondents according to their actual situation. To measure all situations of integration of technology and cultural innovation, we separated the items for "Technological and cultural integration of innovation" into two dimensions. This separation is according to a pilot study with semi-structured interviews and open basis questionnaire, including the "culture to technology integration" and "science and technology to the cultural integration" two dimensions. Intellectual capital is according to Stewart T.A. (1998)[8] proposed the "H-S-C" structure, namely, human capital, structural capital and relational capital three dimensions, and refer to Subramaniam And Youndt (2005) [9] used the scale.

The legitimacy of the organization is divided according to Scott W.R. (2001) 's institutional legitimacy, Specification legitimacy and Cognitive legitimacy three dimensions[10], referring to Certo and Hodge (2007) [11] and other scales for the preparation, resource acquisition scales refers to Yinmiao Miao (2012), etc., and divides into "get inside" and "outside access" two dimensions.[12]

TABLE I. VARIABLES AND MEASUREMENT

Variable	Dimension	Scale test items	Representative scholar
Technological and cultural integration of innovation	Integration of science and technology to culture	High-tech work, digital, network and other 10 test items	(Questionnaire development)
	Culture to technology integration		
Intellectual Capital	Human Capital	12 test items skills, expertise, creativity, cooperation, sharing, partners, processes, networks, and other	Subramaniam And Youndt (2005)
	Structure Capital		
	Relational Capital		
Organizational legitimacy	Institutional legitimacy	Governments, investors, customers, suppliers, competitors and employees and	Certo and Hodge(2007) Du Yunzhou (2012) [13]
	Specification legality		

	Cognitive Legitimacy	other stakeholders 10 test items	
Resource Acquisition	Get inside	Human, financial, technical, material, information, technology and customer resources to obtain 10 test items	Jansen et al., (2005) ,[14] Yin Miaomiao (2012)

(Source: The study finishing)

IV. ANALYSIS AND RESULT

This study used SPSS17.0 and implemented Varimax quarter-turn, and principal component factor analysis of cultural integration of science and technology innovation, intellectual capital, organizational legitimacy and resources acquisition four variables. KMO fixed value is 0.924, the results of more than 0.5 and nearly 1 shows the sample is full. Bartlett'S Sphericity verification value ($p = 0.00, <0.05$) shows the correlation matrix of the variables is statistically significant, factor analysis model is basically appropriate.

A. Analysis

This study used LISREL 9.1 and implemented confirmatory factor analysis (CFA), measured the centralized effectiveness of overall items in the model. The results showed that Load factor has minimum value of 0.685 items, maximum 0.946, showing the good focus effectiveness.

TABLE II. PRINCIPAL COMPONENT FACTOR ANALYSIS

	Technological and cultural integration of innovation (T-C)	Intellectual Capital (IC)	Organization legitimacy (OL)	Resource Acquisition (RA)
technology to culture (T-C1)	0.853	0.140	0.012	0.019
Culture to technology (T-C2)	0.726	0.015	0.109	-0.214
Human Capital (IC1)	0.203	0.905	0.025	0.161
Structure Capital (IC2)	0.347	0.758	0.136	0.125
Relational Capital (IC2)	0.105	0.652	0.204	0.095

Institutional legitimacy (OL1)	0.245	0.352	0.852	0.127
Specification legality (OL2)	0.132	0.024	0.762	0.283
Cognitive Legitimacy (OL3)	0.154	0.210	0.690	-0.053
Get inside (RA1)	0.215	0.029	0.253	0.861
Get outside (RA2)	0.036	0.184	0.139	0.932

Note: The overall interpretation of 75.34%

To verify the fitness of technological and cultural integration of innovative enterprise impacting on access to resources conceptual model and whether the hypothesis is supported, we used the same LISREL9.1 and conducted structural equation modeling analysis, results shown in Fig.2.

Evaluating the proposed conceptual model, Chi-square statistic ($X_2 = 49.35, [df] = 112$) has significant meaning, goodness of fit index $GFI = 0.894$; adjusted goodness of fit index $AGFI = 0.853$; norms fit Index $NFI = 0.89$; Comparative Fit index $CFI = 0.91$, $RMSEA = 0.0637 (<0.08)$, the simplified model goodness of fit $AIC = 108.26$, these indicators reveal that the model has good fitness. The structural equation model also verify the research hypothesis, except that hypothesis H1b is not supported, the other hypothesis have been verified and supported, the path coefficients between the variables and verify results as follows:

TABLE III. STUDY HYPOTHESIS-TESTING RESULTS

Hypothesis testing	Path coefficients	C.R. value	Conclusions of the examination
H_{1a} : Innovation of technology and culture integration has a positive effect on intellectual capital;	0.53	2.25*	Support
H_{1b} : Innovation of technology and culture integration has a positive impact on access to resources;	0.00	-0.029	Refuse
H_{1c} : Innovation of technology and culture integration has a positive impact on organizational legitimacy;	0.36	3.28*	Support
H_{2a} : Intellectual capital has a positive effect on the legitimacy of the organization;	0.39	3.86*	Support
H_{2b} : Intellectual capital has a positive impact on access to resources;	0.42	4.32**	Support
H_3 : Organizational legitimacy has a positive to influence on the enterprise resource acquisition.	0.46	4.04**	Support

Note: ** indicates p-value less than 0.1, * indicates p-value less than 0.05 (2-tailed)

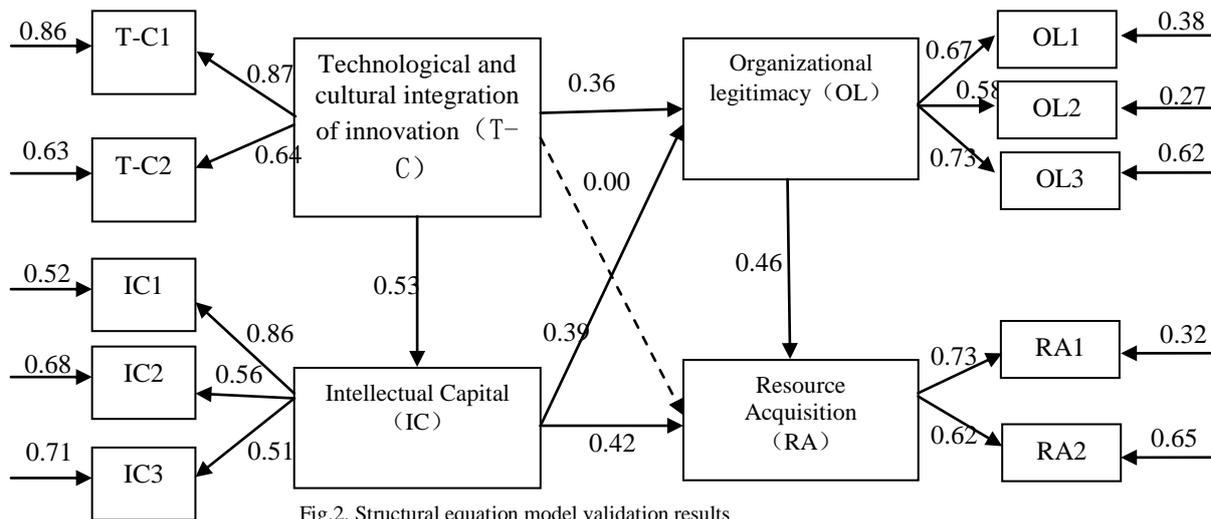


Fig.2. Structural equation model validation results

B. Result

AS shown in Table III ,the results show that in the 95% confidence interval, corporate technological and cultural integration of innovation has positive impact on the intellectual capital [H_{1a}]; technological and cultural integration of innovation has positive impact on the legality of [H_{1c}]; intellectual capital has a positive effect on the organization Legitimacy [H_{2a}]. And in the 90% confidence interval, intellectual capital has a positive effect on access to resources [H_{2b}]; legitimacy has a positive effect on the enterprise resource acquisition [H_3]. The reason why H_{1b} was not supported is probably because that technological and cultural integration of innovation perform firstly as a resource consumption and resources are not available immediately in the short term, but if you put it in a long time, the relationship between the two variables may have changed.

V. Conclusion

Based on the conclusions of this study, culture and science and technology integration of innovation on the enterprise-level, although in the short-term it consumes some resources, in the end may lead to an increase of intellectual capital, as well as enhance the legitimacy of the organization, so that enterprises can get the resources needed for development. In reality, we often find that a lot of animation, online games and even Internet companies, often invest part of the limited resources to get a new technology or develop a good work (and APPs), accumulate technology, work and users and other resources, when they are reached to some extent, they will be known and recognized by the industry and the community, business valuation will be enlarged, venture capital, high-end talent, government resources will be involved in, thus they can solve the bottleneck of business development resources, and "leverage" the effect. In this sense, adhere to scientific and technological innovation and cultural integration is a very cost-effective strategic choice to the current development of cultural and creative enterprises.

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