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An Empirical Analysis of the Relationship between Corporate IT Capability and Alliance Performance

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Abstract: This paper studied the relationship between corporate IT capability and alliance performance in Chinese corporate alliances with regression analysis. With a sample of 127 alliances, this paper found IT capability has significantly positive effect on alliance performance and knowledge acquisition plays a role as a mediator, while regional factor plays a role as a moderator. That means the positive effect of IT capability on alliance performance is stronger in cross-region alliances than same-region alliances.

Keywords: Regression analysis; IT capability; Alliance performance; Knowledge acquisition

1. INTRODUCTION

With the dynamic environment and competition intensifies day by day, Individual enterprises can hardly rely on its own strength to achieve sustained and stable development. So the strategic alliance has become one of the most important enterprise growth modes. Just as the former experts like Mesquita, Anand, Brush (2008), Kale, Singh (2007) and Ireland, Hitt and Vaidyanath (2002) proved that Strategic alliance is thought to reduce the transaction cost, increase the economy of scale and scope economy, enhance the enterprise to deal with the ability of operating risk. Especially in the process of globalization, strategic alliance is regarded as the first choice of entering a foreign market. In reality, the strategic alliance of this form of organization already favored many managers. Research on strategic alliance field indicates that some enterprises alliance was more successful than other company. Factors influencing the scholars have done a lot of research on alliance performance. Dyer, Singh and Kale (2008) and other scholars pointed out one of the key factors which affect enterprise alliance performance is the enterprise information and the ability to use information in the alliance process, including a variety of explicit knowledge and tacit knowledge which rely on the enterprise's information technology ability to support. Although the strategic alliance may exist as independent legal person and other organization form of joint venture company, the essence is still is a cooperation between enterprises which means reallocation of resources and utilization, especially the access and delivery of various information sharing. Therefore, enterprise information technology ability plays a key role in theory.

However, scholars study different conclusions and views on the relationship between the information technology capability and firm performance, Weill (1992) found that high technology enterprises in the industry of high investment in IT often means high profit. Bharadwaj (2000) believe that the information technology ability is stronger, the higher profit margins and the cost is low^[9]. Santhanam and Hartono (2003) also verified the positive relationship between information technology capability and firm performance^[10]. Jean (2010) empirical research has confirmed the manufacturers IT resources contribute to its more effectively for its customer service and obtain more revenue^[11]. However, Li and Ye (1999) showed that the IT investment and enterprise profit increase is not significant correlation^[12]. Ray, Muhanna and Barney (2005) empirical research does not support the ability of information technology of enterprise performance will generate significant positive role^[13]. Wang (2006) also found that manufacturing enterprises in the integration process of IT investment does not seem to have a direct cost reduction effect. Ravichandran (2009) also believes there is only a weak association between corporate performance in information technology and enterprise performance.

Liang (2010) empirical research for enterprise information technology published more than 40 top journals based on Meta-Analysis. The results indicate the presence of uncertainty relation between IT resources and enterprise performance, but the intermediary effect of enterprise IT capability between IT resources and enterprise performance has a stronger explanation^[16]. From the existing literature can be seen, although there has been a certain number of works studied for the enterprise information technology capabilities, the research results have not yet obtained the consistent conclusion which mostly pointed to a direct relationship between information technology capability and enterprise performance of enterprises and less research on information technology capability in strategic alliance of enterprises. Therefore, in order to reveal the ability of IT alliance in Chinese context is helpful to achieve their alliance target, this paper attempts to study the ability of IT enterprise of China enterprise alliance during the transition period. For the ongoing alliance or possible future alliance of Chinese Enterprises, Whether you need to pay attention to and increase the IT investment so as to strive to improve their ability of information technology is a practical problem. In case of that , this study has a certain practical value.

2. THEORY AND HYPOTHESIS DEVELOPMENT

2.1 The enterprise IT capability and alliance performance

From the resource based view, Bharadwaj (2000) believe that the information technology ability is to integrate other resources organization by using and allocation of its information technology resources. ^[9] In strategic alliance, if the enterprise information technology ability is high, the enterprise is able to skillfully and effectively use information technology to manage their access to various information.^[6] Rai (2006) put forward that an enterprise with an effective integration of various information ability has a stronger ability of information technology .When it cooperate with other companies, including the industrial chain upstream and downstream enterprises and enterprises in the same industry in the process of cooperation, can have the value of utilization of information technology infrastructure across corporate boundaries for high rate transmission of information.^[17] Furthermore, enterprises which has IT ability ,is easier to increase their awareness of customer and market demand, and conducive to enterprise development and innovation ability. In addition, Mesquita, Anand and Brush (2008) ,base on the view of resource dependence theory ,thought that the stronger the enterprise information technology ability is ,the more conducive to the use of various resources in the ^[1] alliance, Steensma (2008) from the perspective of organizational learning pointed out that the stronger enterprise information technology ability is, the more conducive to get more knowledge from the alliance, which is beneficial to the enterprise's own strategic interests in ^[4]. Particularly, IT capabilities can increase the enterprise information and the effectiveness and efficiency of information from the alliance. In the complementary strategic alliance, for example, alliance partners will acquire the necessary knowledge and information more targeted by using the information means. Dyer, Singh and Kale (2008) and other scholars from the transaction cost theory, thought that the stronger the enterprise information technology ability is, the more conducive to the control of potential alliance cooperation risk and so as to reduce the transaction cost. For example, the effective information opportunism behavior can enhance the supervision enterprise alliance partners in the process of cooperation and increase the operation risk of understanding and control the financial risk. ^[5] In addition, IT capabilities can help enterprise to reduce operation inner cost and to reduce the agency cost between the levels of enterprises in order to improve the efficiency.^[14] Based on this, this study proposes the following hypothesis:

Hypothesis 1: IT capability and enterprise performance is positively related to the alliance.

2.2 The enterprise IT capability and alliance performance: the mediating effect of knowledge acquisition

Good IT capacity means that the enterprise can efficiently identify, coding, storage of information, and is convenient for employees for the understanding and use of information, which is conducive to the formation and transmission of knowledge. Tippins and Sohi (2003) pointed out that IT ability can strengthen contacts and communication between employees, so as to promote the knowledge flow and diffusion, base on which can be the formation of the enterprise knowledge [6]. In strategic alliance, enterprises have good IT ability to provide a platform of information and knowledge transfer and sharing information among alliance partners, and then to access the effective information and complementary knowledge based on this platform. For example, in the vertical alliance, IT can promote access to upstream and downstream partners operating and demand information, also enhance the union operation efficiency. Wang Xiaojian and Lan Hailin (2012), base on the case study of Tsingtao beer, CIMC, Haier Group and Suning Appliance and other four enterprises, found that enterprise IT ability to make the information sharing which between the enterprise and the upstream and downstream partners come true. In the mean time, collect and feedback the downstream customer needs timely and share it to customer demand quick sharing to supply chain system, logistics and distribution system, financial system, customer service system, process system. So as to make the implementation of collaborative services to customers' needs come true and greatly shorten the response time to customer needs. What's more, make the enterprise and the supplier and the customer communication between smooth [18]. Based on this, this study proposes the following hypothesis:

Hypothesis 2: knowledge acquisition has mediating effect between IT capability and alliance performance.

2.3 The enterprise IT capability and alliance performance: moderating effect of regional factors

In China, due to the existence of a certain degree of market segmentation of reality, the regional factors become one of the important factors affecting corporate behavior and performance. Cross-regional business and cooperation in Chinese enterprises in China, the relationship between the proper coordination with foreign partners or the field of alliance and the efficient use of the relevant information, is the key point to influence business performance and difficult, has also been a considerable attention of academia and business circles [19]. The main purpose of the enterprise cross-regional alliance is to improve the overall economic efficiency of enterprises and expand the business scope. In this case, the local affiliates must respond quickly to local needs, improve the efficiency of integration of the parent company and constantly seek new market opportunities and profit growth point. Only in this case, can enterprise achieve the overall business goals of. [20] (Bartlett and Ghoshal, 1989). When the parent companies and joint venture companies in different areas, its positive effects of information technology capability on alliance capability is stronger than in the same region. The opportunism behavior of cross-regional cooperation coalition partner may stronger. And the parent company needs stronger control ability. So the stronger the information technology ability is, the more information and resources for the acquisition and control ability will be, which then thus more conducive to the enhancement of alliance. Based on this, this study proposes the following hypothesis:

Hypothesis 3: regional factors on the relationship between IT capability and alliance performance play a role in the regulation of.

3. RESEARCH DESIGN

3.1 Sample

In this study, obtaining first-hand data for empirical analysis through the questionnaire, respondents in China currently own or have experience in Enterprise Alliance. Respondents were executives or directly

involved in the alliance of enterprises responsible person. Through interviews, e-mail, the paper mail, telephone and other means, a total of 400 questionnaires were issued, 142 were recovered, excluding 15 invalid questionnaires, 127 valid questionnaires were obtained, the valid return rate was 35.5%.

3.2 Variables

Alliance performance(AP): according to Kale and Singh (2007) and Sarkar (2001) study, whether achieve alliance targets to measure or not is used to measure the variable, including market three aspects, customer satisfaction, profit rate. [2,21].

IT Ability(IT): according to Bharadwaj (2000) and Santhanam and Hartono (2003) study, the measurement of IT capabilities including the degree of IT advancement(IT_Ad) and the degree of IT integration(IT_In). IT advancement degree mainly refers to the advanced level of respondents in their IT infrastructure and IT skill, IT integration is the main refers to the degree of matching management skills, platform surveyed enterprises the ability of IT in cooperation with the alliance of enterprises in the process of sharing and strategy^[9 10].

Knowledge Acquisition(KA): according to Kale and Singh (2007) study, according to the industry knowledge, technical knowledge, management knowledge and the union related knowledge, We measured the degree of knowledge which respondents have obtain during the alliance cooperation time. [2]

Regional factors(REG): regional factors is the model of the variable, the variable is set to 0-1 virtual variables, which is judged by whether the respondent's cooperative enterprises and alliance is in the same administrative district. According to Qi Yue and Lan Hailin (2012) studies, this research takes cities as the basic administrative units in the region^[19].

In addition, this study provided the following control variables:

(1) Industry(IND): 0-1 dummy variables, judged by the surveyed enterprises that the main business of the industry is in, 1 in manufacturing, service industry is 0.

(2) Size(SIZE): measured by the total assets of the surveyed enterprises, the logarithm.

(3) State-owned Shares(SOS): measured by the proportion of state-owned shares: the state-owned shares of the surveyed enterprises.

(4) Alliance age(AGE): measured by the respondents' partnership enterprise and its alliance have the cooperation period.

(5) Upstream or downstream(UOD): On the downstream: 0-1 virtual variables, belongs to the upstream and downstream cooperation is 1; non downstream cooperation, such as industry-wide cooperative or cooperative marketing, value is 0.

4. RESULTS AND ANALYSIS

Table 1 shows the mean, the standard deviation and correlation coefficient matrix of each variable in the present study. From the correlation coefficients in table 1 between IT capability and alliance performance can be seen that there exists a linear relationship between the two. At the same time, knowledge acquisition showed a linear correlation both on IT capability and alliance performance. Table 2 shows the regression results for all models in this study. Among them, model 1 for regression model with control variables and IT capability, which examine the relationship between IT capability and alliance performance. Model 2 and model 3 is used to test the mediating effect of knowledge acquisition. The model 2 takes knowledge acquisition as the dependent variable, IT as variables, while model 3 based on the model 1 is added on the knowledge acquisition. Model 4 is the regulation of inspection area factors. It can be seen from table 2, the regression results of model 1 shows that the regression coefficient IT capability and alliance performance was 0.233 ($p < 0.01$), which indicates that the enterprise IT capability and alliance performance have significant positive correlation and hypothesis 1 received

support. In model 2, the regression coefficient IT ability and knowledge acquisition was 0.205 ($p < 0.1$), which demonstrate the IT capabilities and knowledge acquisition variables have significant positive correlation. Regression coefficients of the model IT capability and alliance performance in model 3 was 0.076 ($p < 0.1$), less than model 1 which is 0.223, and it proved that IT positive impact on alliance performance decreased significantly after adding a knowledge acquisition variables. Meet inspection standard variables of the mediating role, knowledge acquisition have part of the intermediary role between IT capability and alliance performance. Hypothesis 2 received support. Model 4, the coefficient of the IT product capability and regional variables is 0.301 ($p < 0.1$), which proved that regional factors have significant moderating effect on the relationship between IT capability and alliance performance. Hypothesis 3 received support.

Table 1. The mean, standard deviation and coefficient of correlation of each variable

Variables	Mean	St.d.	AP	IT	KA	REG	IND	SIZE	SOS	AGE
AP	3.45	0.78								
IT	3.58	0.92	.385***							
KA	3.55	0.94	.857***	.305***						
REG	0.59	0.49	.065	.146	-.002					
IND	0.61	0.49	.122	.151*	.223**	.089				
SIZE	18.49	5.08	.104	.218**	.013	.093	.013			
SOS	0.19	0.36	-.172*	-.117	-.158*	-.245**	-.213*	.107		
AGE	2.48	1.23	.113	.158*	.121	.057	.050	.007	.115	
UOD	0.57	0.50	-.052	.020	.007	-.090	-.042	-.042	-.084	.068

Table 2. The regression results of model 1 and model 2

	Model 1			Model 2		
	AP			KA		
	Coefficient	T-value	Sig.	Coefficient	T-value	Sig.
IND	.151	1.002	.319	.375	2.060	.042
SIZE	.007	.461	.646	-.014	-.760	.449
SOS	-.236	-1.111	.269	-.240	-.935	.352
AGE	.075	1.249	.214	.092	1.275	.205
UOD	-.101	-.714	.477	-.010	-.060	.952
REG	.028	.189	.851	-.021	-.115	.909
IT	.223	2.635	.010	.205	2.005	.048
KA						
IT*REG						
R	.140			.131		
R-Square	.081			.072		
F-value	2.372		.027	2.205		.040

Table 3. The regression results of model 3 and model 4

	Model 3			Model 4		
	AP			AP		
	Coefficient	T-value	Sig.	Coefficient	T-value	Sig.
IND	-.118	-1.520	.132	.138	.923	.358
SIZE	.018	2.217	.029	.010	.617	.539
SOS	-.064	-.597	.552	-.210	-.998	.321
AGE	.009	.287	.775	.083	1.393	.167
UOD	-.094	-1.315	.191	-.102	-.729	.467
REG	.043	.573	.568	-1.052	-1.734	.086
IT	.076	1.753	.083	.097	.896	.372
KA	.718	17.365	.000			
IT*REG				.301	1.838	.069
R	.784			.168		
R-Square	.767			.102		
F-value	45.885		.000	2.546		.014

5. CONCLUSION

Resource based view of the scholars emphasized the relations between the enterprise competence and enterprise performance. With the development of information technology, enterprise IT capability has increasingly become an important source of enterprise to obtain competitive advantage. Under the background of transition, this paper mainly aims at discussing the enterprise strategic alliance of Chinese enterprise IT capability and alliance performance relationship. The empirical test for China's enterprise IT capability and its

alliance performance directly effects which also proved that knowledge acquisition in the intermediary effect and regional factors on the regulating effect of the relationship between them. The results showed that the enterprise IT capability to its alliance performance has significant positive effect. At the same time, the knowledge acquisition plays a partial intermediary role between IT capability and alliance performance. Which results in Santhanam and Hartono (2003), and Bharadwaj (2000) found out that the enterprise IT capability play a positive role to the enterprise performance, and it emphasized the importance of enterprise IT capability in the strategic alliance, at the same time reveals the enterprise IT capability through knowledge acquisition intermediary role to promote the alliance performance, namely IT capability encourages enterprise to obtain the effectiveness and efficiency of knowledge, thereby increasing its revenue from the alliance cooperation process. In addition, this study confirms that the regional factor in the relation between IT capability and alliance performance has significant regulatory role, for specific performance, and compared with regional alliance, cross-regional cooperation alliance enterprise IT capability has stronger positive effects on alliance performance. The results support the theory system of scholars on China's regional differences in the institutional environment which has a significant impact on corporate behavior and corporate performance To a certain extent, this study enriched the Chinese situation of enterprise strategic alliance research, also further support the theory of system for China's situation of China enterprise strategic behavior and performance research. The results for Chinese enterprise managers on how to realize the union during the process of strategic alliance cooperation target and improve enterprise international competitiveness to provide certain theoretical reference.

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REFERENCES

- [1] Bruton G., Oviatt M., White A. Performance of acquisitions of distressed firms. *Academy of Management Journal*. 1994; 37(4): 972 - 89.
- [2] Kusewitt J. An exploratory study of strategic acquisition factors relating to performance. *Strategic Management Journal*. 1985; 6(2): 151-69.
- [3] Hitt M., Ireland R., Camp S., Sexton D. Strategic entrepreneurship: entrepreneurial strategies for creating wealth. *Strategic Management Journal*. 2001; 22 (Special Issue): 479 - 91.
- [4] Palich L., Cardinal L., Miller C. Curvilinearity in the diversification-performance linkage: an examination of over three decades of research. *Strategic Management Journal*. 2000; 21(2): 155 - 74.
- [5] Datta D., Puia G. Cross-border acquisitions: an examination of the influence of relatedness and cultural fit on shareholder value creation in U.S. acquiring firms. *Management International Review*. 1995; 35: 337-59.
- [6] Hoskisson R., Eden L., Lau C-M, Wright M. Strategy in emerging economies. *Academy of Management Journal*. 2000; 43(2): 249-67.
- [7] Haspeslagh P., Jemison D. *Managing Acquisitions: Creating Value Through Corporate Renewal*. New York: Free Press; 1991.
- [8] Bruton G., Oviatt M., White A. Performance of acquisitions of distressed firms. *Academy of Management Journal*. 1994; 37(4): 972 - 89.
- [9] Kusewitt J. An exploratory study of strategic acquisition factors relating to performance. *Strategic Management Journal*. 1985; 6(2): 151-69.
- [10] Hitt M., Ireland R., Camp S., Sexton D. Strategic entrepreneurship: entrepreneurial strategies for creating wealth. *Strategic Management Journal*. 2001; 22 (Special Issue): 479 - 91.
- [11] Palich L., Cardinal L., Miller C. Curvilinearity in the diversification-performance linkage: an examination of over three decades of research. *Strategic Management Journal*. 2000; 21(2): 155 - 74.
- [12] Datta D., Puia G. Cross-border acquisitions: an examination of the influence of relatedness and cultural fit on shareholder value creation in U.S. acquiring firms. *Management International Review*. 1995; 35: 337-59.
- [13] Hoskisson R., Eden L., Lau C-M, Wright M. Strategy in emerging economies. *Academy of Management Journal*.

- 2000; 43(2): 249-67.
- [14] [8] Haspeslagh P., Jemison D. *Managing Acquisitions: Creating Value Through Corporate Renewal*. New York: Free Press; 1991.
- [15] Capron L., Hülland J. Redeployment of brands, sales forces, and marketing expertise following horizontal acquisitions: A resource-based view. *Journal of Marketing*. 1999; 63(April): 41-54.
- [16] Hayward M., Hambrick D. Explaining the premiums paid for large acquisitions: evidence of CEO hubris. *Administrative Science Quarterly*. 1997; 42: 103 - 27.
- [17] Scott W. *Institutions and Organizations*. Thousand Oaks: Sage Publications; 2001.
- [18] Dacin M., Oliver C., Roy J. The legitimacy of strategic alliances: an institutional perspective. *Strategic Management Journal*. 2007; 28(1): 169-87.
- [19] Chan C-M, Makino S. Legitimacy and multi-level institutional environments: implications for foreign subsidiary ownership structure. *Journal of International Business Studies*. 2007; 38(2): 621-38.
- [20] Yiu D., Makino S. The choice between joint venture and wholly owned subsidiary: an institutional perspective. *Organization Science*. 2002; 13(6): 667 - 83.
- [21] Gulati R., Singh H. The architecture of cooperation: managing coordination costs and appropriation concerns in strategic alliances. *Administrative Science Quarterly*. 1998; 43: 781 - 814.
- [22] Kostova T., Zaheer A. Organizational legitimacy under conditions of complexity: the case of the multinational enterprise. *Academy of Management Review*. 1999; 24: 64 - 81.
- [23] Krishnan R., Joshi S., Krishnan H. The influence of mergers on firms' product-mix strategies. *Strategic Management Journal*. 2004; 25(6): 587-611.
- [24] Kim J., Finkelstein S. The effects of strategic and market complementarity on acquisition performance: evidence from the U.S. commercial banking industry. *Strategic Management Journal*. 2009; 30(2): 617 - 46.