The Influence Mechanism of Resource Integration Ability, Alliance Network on Knowledge Sharing

Shan Duan[1], and Yan Cai[2, *]

[1] Institute of Scientific and Technical Information of Zhejiang Province (Zhijiangnan Think Tank), Hangzhou 310000, Zhejiang, China

[2] School of Business Administration, Zhejiang University of Finance and Economics, Hangzhou 310018, Zhejiang, China

Keywords: Resource Integration Ability, Alliance Network, Knowledge Sharing

Abstract: According to the research framework of "capability-network-knowledge sharing", this research collected 260 alliance enterprises' data through the questionnaire, and deeply analysed the relationship mechanism between enterprise resource integration ability, alliance network and knowledge sharing, and conclusions are follows: (1) enterprise resource integration capability has positive impact on knowledge sharing. Resource utilization and allocation capabilities have significant effects on the quality and scope of knowledge sharing. Resource acquisition capability has a significant impact on the scope of knowledge sharing. (2) Alliance network (centrality position and relationship strength) has a positive impact on knowledge sharing (the quality and scope of knowledge sharing), and plays a mediating role in resource integration and knowledge sharing. In other words, resource integration capability can affect the alliance network and furthermore can affect knowledge sharing.

1. Introduction

In the era of knowledge economy, knowledge has become an important strategic resource and a necessary condition for enterprises to survive. With the change of market form, knowledge sharing among organizations has become an important driving force for enterprises to acquire new knowledge and realize innovative development. In order to obtain more scarce resources, enterprises must make full use of their existing resources and extend knowledge-sharing learning objects to suppliers, customers, R&D institutions, universities, and even current and potential competitors. According to Powell (1996), knowledge is widely distributed in alliance network, which is an important source of learning and innovation for partner enterprises [1]. Alliance network is an important channel for enterprises to acquire external knowledge resources and integrate then utilize them. This paper takes Resource Integration Ability, Alliance Network and Knowledge Sharing into the same theoretical analysis framework, to explore the effect mechanism of enterprise Resource Integration Ability on Knowledge Sharing, the effect Mechanism of Resource Integration Ability on Alliance Network and the effect Mechanism of Alliance Network on Knowledge Sharing. In the end, this paper will verify whether the Alliance Network plays an intermediary role in the transmission path of knowledge sharing which is influenced by the ability of resource integration.

2. Conceptual Framework

Resources are the basis for the survival and development of enterprises, and the ability of resource integration is the key to the survival and development of enterprises [2]. The business environment is becoming more and more open, and resources, including knowledge resources, which are closely related to the development of enterprises, are dispersed to different enterprises. If enterprises want to acquire enough knowledge to achieve the success in market competition, they must integrate resources and share knowledge with different enterprises. The integration of resources refers to the selection, absorption, allocation, activation and organic integration of

resources from different sources, levels, structures and contents, so as to make them more flexible, orderly, systematic and valuable, forming a new core resource system [3], which are deeply affected by Resource Integration Ability [4]. Therefore, the sharing of knowledge resources is an important link in the allocation of enterprise resources, and the degree of sharing must be closely related to it. The ability of resource integration has an important impact on the sharing of knowledge. This paper is a reference of the research results by GE & Dongjiu [5], who proposed that the ability of resource integration is the ability to identify, acquire, allocate and utilize resources in the process of development which also clear and defines the four dimensions of the Resource Integration Ability: the ability to identify resources, the ability to acquire resources, the ability to allocate resources and the ability to use resources.

Previous studies have shown that the alliance network can transfer resources and information faster and more effectively. Knowledge as an important enterprise resource can be transferred and shared by Alliance Network [6]. Therefore, the use of knowledge resources embedded in the alliance network is particularly important [7]. However, not all enterprises embedded in the alliance network will share their own knowledge or technology, because of the purpose of embedding in the alliance network, the strength of the relationship with other network members, and the location in the alliance are different, the effect of knowledge sharing is not the same.

Based on this, this paper proposes the following assumptions and theoretical models (as shown in Figure 1):

H1: Resource Integration Ability has a positive effect on knowledge sharing.

H2: Resource Integration Ability has a positive effect on the alliance network.

H3: Alliance Network has a positive effect on knowledge sharing.

H4: Alliance Network plays an intermediary role in Resource Integration Ability and Knowledge Sharing.
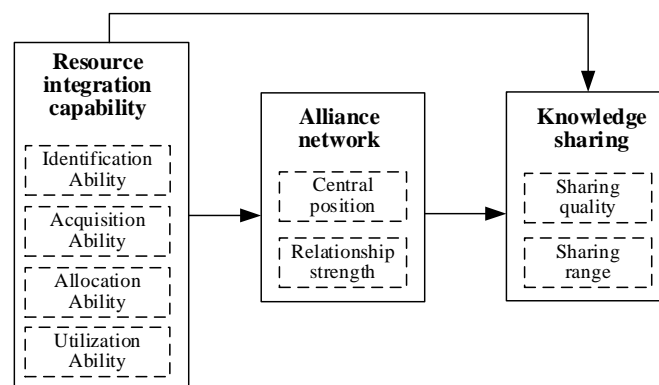

Figure 1 Concept Model

3. Methods

In order to explain the internal mechanism of Resource Integration Ability, Alliance Network and Knowledge Sharing, this paper will prove the correctness of theoretical assumptions through empirical research. Because the object of this paper is the alliance and its enterprises, and most materials are enterprise internal data, which cannot be obtained through the public information, the questionnaire survey method is adopted.

3.1 Study Subjects and Data Set

The questionnaire is a survey method that researchers use the questionnaire designed in a unified way to know the situation or seek advice from the selected subjects, and it is also the main method of statistical analysis in the subject of management. The questionnaire design of this paper mainly revolves around the enterprise Resource Integration Ability, Alliance Network and Knowledge Sharing.

3.2 Measures of Observed Variables

In this paper, the Likert 7-point scale method is used to measure the variables. Most of the variables come from the mature scales that are available and have been verified at home and abroad. For a very small number of items that do not have a suitable reference scale, On the basis of a full understanding of its connotation and extension, and on the basis of on-the-spot interviews with enterprises, combined with the perspective and content of this study, the corresponding measurement items are set up, and the experts in the relevant fields put forward their opinions and evaluations on the items. According to their feedback, we supplement and revise the items, and finally form a complete scale measurement system which is needed in this paper.

Resource Integration Ability measurement scale consisting of four latent variables: resource identification ability, resource acquisition ability, resource allocation ability and resource utilization ability is constructed. The item design is mainly based on Ge & Dong (2009), Dang Xinghua (2013) and other people who have studied the maturity scale used [5][8], combined with the feedback from the field survey. The scale consists of 18 items, such as "Enterprises are well aware of their skills (A11)".

Alliance Network measurement scale is constructed, which consists of two latent variables: Central Position and Relationship Strength. Based on the design of Lavie et al. (2007), Peng Wei and Fu Zhengping (2015), combined with feedback from field research [9-10], the item was revised and added to form as a total of 9 items, such as "Occupy an important position in Alliance Network (B11)".

Knowledge Sharing measurement scale consisting of two latent variables: Knowledge Sharing Quality and Knowledge Sharing Scope is constructed. The design of the item is mainly based on the mature scale of Chiu et al. (2006) [11], combined with the feedback from the field survey, which mainly contains 9 items, such as "Strong correlation of knowledge sharing (C11)".

3.3 Statistical Analysis

The structural equation model (SEM) is used to analyse the hypothetical relationship between latent variables and observation variables, and can be used to test dependent variables and independent variables simultaneously [12]. SEM not only describes how the observed variables measure the latent variables, but also shows the relationship between the observed variables and the potential variables. It can also effectively test the causal relationship between the observed variables and the potential variables [13]. In the process of designing variables, considering the ability of resource integration, it is difficult to obtain data directly by alliance network and knowledge sharing, and the relationship between variables is complex, so the structural equation analysis method is adopted. What's more, AMOS software is used to test the assumptions in the research framework.

4. Results

4.1 Hypothesis Test of The Relationship Between Resource Integration Ability and Knowledge Sharing

The overall fitting effect of the model (Figure 2) shows that the value of x2/df is 1.315, less than 3; the values of GFI, NFI, AGFI, CFI and IFI are 0.877, 0.889, 0.861, 0.971 and 0.971, respectively, both greater than 0.8, and the values of RMSEA are 0.038, less than 0.08. All the goodness-of-fit indexes meet the requirements, so the measurement model is effective.
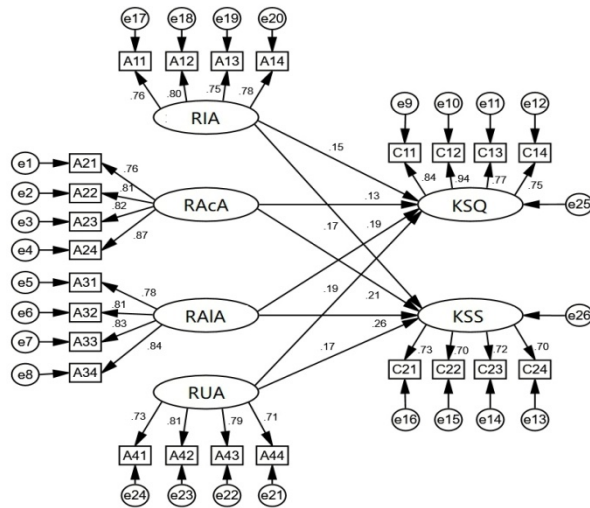
Figure 2 A fractal analysis model of the influence of Resource Integration Ability on Knowledge Sharing

Note: For the convenience of drawing, the dependent variable is replaced by the initials. We use RIA for Resource Identification Ability, RAcA for Resource Acquisition Ability, RAlA for Resource Allocation Ability, RUA for Resource Utilization Ability, KSQ for Knowledge Sharing Quality, KSS for Knowledge Sharing Scope, CP for Central Position, PS for Relationship Strength. Similarly hereinafter.

4.2 Hypothesis Test of The Relationship Between Resource Integration Ability and Alliance Network

The overall fitting effect of the model (Figure 3) shows that the value of x2/df is 1.296, less than 3; the values of GFI, NFI, AGFI, CFI and IFI are 0.889, 0.890, 0.864, 0.972 and 0.972, both greater than 0.8, and the values of RMSEA are 0.037, less than 0.08. All the goodness-of-fit indexes meet the requirements, so the measurement model is effective.
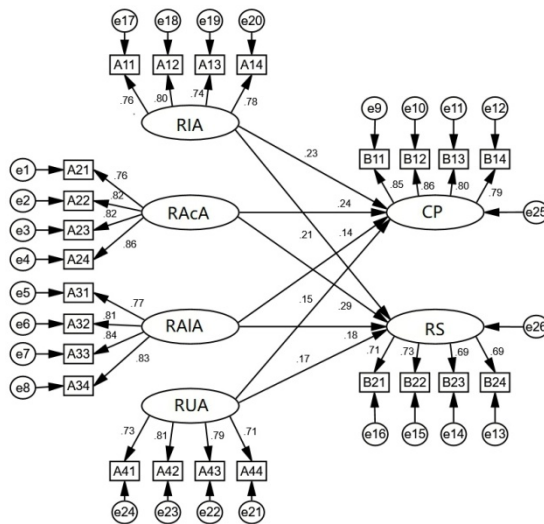

Figure 3 A fractal analysis model of the influence of Resource Integration Ability on Alliance Network

4.3 Hypothesis Test of The Relationship Between Alliance Networks and Knowledge Sharing

The overall fitting effect of the model (Figure 4) shows that the value of x2/df is 1.551, less than 3; the values of GFI, NFI, AGFI, CFI and IFI are 0.920, 0.921, 0.891, 0.970 and 0.970, respectively, both greater than 0.8, and the values of RMSEA are 0.051, less than 0.08. All the goodness-of-fit indexes meet the requirements, so the measurement model is effective.
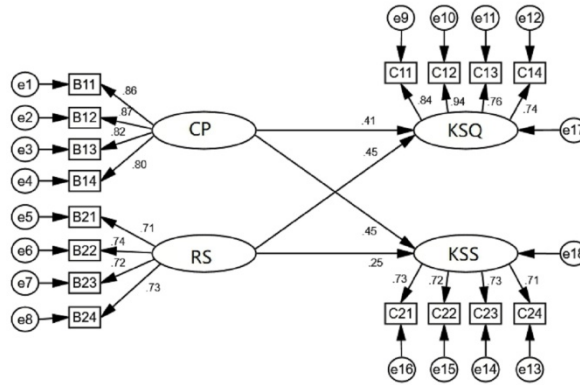
Figure 4 A fractal analysis model of the influence of Alliance Network on Knowledge Sharing

4.4 Hypothesis Test of Mediation Effect

The overall fitting effect of the model (Figure 5) shows that the value of x2/df is 1.224, less than 3; the values of GFI, NFI, AGFI, CFI and IFI are 0.867, 0.867, 0.842, 0.972 and 0.973, respectively, both greater than 0.8, and the values of RMSEA are 0.032 less than 0.08. All the goodness-of-fit indexes meet the requirements, so the measurement model is effective.
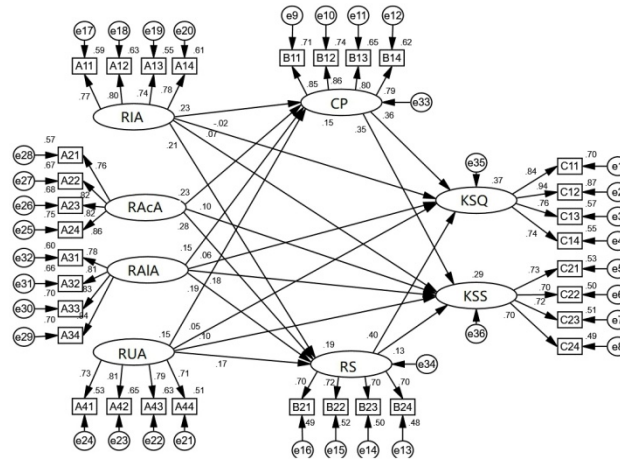

Figure 5 Analysis Model of Mediation effect in Fractal Dimensions.

Therefore, CP plays a full mediation role in RIA, RAlA, RUA and KSQ, and plays a full mediation role in RIA, RAcA, RUA and KSS, and plays a partial mediation role between RAlA and KSS. What's more, RS plays a full mediation role in RIA, RAlA, RUA and KSQ.

5. Discussion

Resource Integration Ability is an important guarantee of enterprise alliance. The resource integration of both sides of alliance can promote the formation of interest community of enterprises and can boost alliance performance. Through a questionnaire survey of 260 alliance enterprises, this paper finds that Resource Identification Ability, Resource Allocation Ability and Resource Utilization Ability have a significant impact on the quality and scope of Knowledge Sharing, and Resource Acquisition Ability has a significant impact on the scope of knowledge sharing. This fully shows that enterprises in the alliance network can accurately identify the knowledge resources they need, and obtain knowledge from them, so as to enhance their competitive advantage. According to the acquired resources, the alliance enterprise reconfigures, combines, coordinates and rebuild resources, which plays an important role in the development of the enterprise, and helps to absorb more core resources and improve the quality and scope of knowledge sharing. More critical to knowledge-sharing within the alliance is the integration of existing resources for their efficient use, what is called Resource Utilization Ability, that can effectively expand the channels of communication of knowledge resources, thereby improving the quality and scope of knowledge

sharing. Alliance Network has a positive impact on Knowledge Sharing, and play an intermediary role in Resource Integration and Knowledge Sharing.

Alliance network is an important form for enterprises to acquire external knowledge in order to break through the bottleneck of innovation and promote competitive advantage [14]. The results of empirical research show that alliance network is helpful for enterprises to improve the quality and scope of knowledge sharing through the ability of resource integration. Specifically, Central Position plays an intermediary role between Resource Integration Ability and Knowledge Sharing Quality and Scope. The Relationship Strength plays an intermediary role between the Resource Integration Ability and the Knowledge Sharing Quality, Scope.

Therefore, this research further enriches the research depth of industrial alliance network, and promotes the expansion and application of enterprise capability theory, knowledge theory and alliance theory. At the same time, the conclusion of this paper shows that promoting the construction and development of industrial alliance is an effective way to solve the bottleneck of industrial technology, promote the innovation of technology integration and enhance the core competitiveness of industry.

Acknowledgements

References

[1] Powell, W. W., & Smith-Doerr, K. L. (1996) Interorganizational collaboration and the locus of innovation: networks of learning in biotechnology. Administrative Science Quarterly, 41(1), 116-145.

[2] Basili, V. R., & Weiss, D. M. (1981) Evaluation of a Software Requirements Document by Analysis of Change Data. Proceedings of the 5th international conference on Software engineering. DBLP.

[3] Dong Baobao, Ge Baoshan, Wang Kan. (2011) Resource integration process, dynamic capability and competitive advantage: mechanism and path. Management World, 3, 92-101.

[4] Eisenhardt, K. M., & Martin, J. A. (2000) Dynamic capabilities: what are they? (p 1105-1121). Strategic Management Journal, 21(10-11), 17.

[5] Ge, B., & Yu, D. (2009) the Impact of Network Capabilities on Entrepreneurial Resource Acquisition. 2009 IITA International Conference on Control, Automation and Systems Engineering (case 2009). IEEE.

[6] Phelps, & C., C. (2010) A longitudinal study of the influence of alliance network structure and composition on firm exploratory innovation. Academy of Management Journal, 53(4), 890-913.

[7] Tolstoy, D., & Agndal, H. (2010) Network resource combinations in the international venturing of small biotech firms. Technovation, 30(1), 0-36.

[8] Dang Xinghua. (2013) Research on the influence of Technology Heterogeneity and Technology intensity on abrupt Innovation-the regulating effect based on Resource Integration ability. Scientific research, 1(13), 132-140.

[9] Lavie, D. (2007) Alliance portfolios and firm performance: a study of value creation and appropriation in the u.s. software industry. Strategic Management Journal, 28(12), 1187-1212.

[10] Peng Wei, Fu Zhengping. (2015) Research on the relationship between Alliance Network,

Resource Integration and High-tech start-up Enterprise performance. Management Science, (3), 26-37.

[11] Chiu, Hsu, Wang. (2006). Understanding Knowledge Sharing in Virtual Communities: An Integration of Social Capital and Cognitive Theories. Decision Support Systems, 42(3), 1872-1888.

[12] Ullman, & Jodie, B. (2006) Structural equation modelling: reviewing the basics and moving forward. Journal of Personality Assessment, 87(1), 35-50.

[13] Crowley, S. L., & Fan, X. (1997) Structural equation modelling: basic concepts and applications in personality assessment research. Journal of Personality Assessment, 68(3), 508-531.

[14] Song Zhihong, Chen Peng, Fan Libo. (2001) an empirical study on the relationship between knowledge characteristics, knowledge sharing and enterprise innovation ability. Scientific Research, 28 (4), 597-634.