Chapter 84
The Research of Relationship Capital and Demand-Pull Absorptive Capacity Impact on Innovation Performance

Man Yang, Wei Liu and Huiying Zhang

Abstract This paper provides new perspective to study the impact of relationship capital and absorptive ability on the innovation performance. Considering the character of Chinese enterprise, absorptive ability discussed in this paper is demand-pull absorptive capacity, which can be divided into potential demand-pull absorptive capacity and realized demand-pull absorptive ability. On the basis of questionnaire survey, we confirm the relationship among relationship capital, demand-pull absorptive capacity and innovation performance. We probe into the intermediary roles of the potential demand-pull absorptive capacity and the realized demand-pull absorptive capacity under the positive effects of relationship capital to innovation performance. In addition, we also implement an empirical research on the inner relation between potential absorptive ability and realized absorptive capacity.

Keywords Relationship capital · Demand-pull absorptive ability · Innovation performance

84.1 Introduction

Under the fierce competitive situation, innovation plays an increasingly significant role in process of globalization. Then innovative capability can be core competitiveness power for enterprise sustained development. In fact, the incessant innovation is motive to improve enterprise situation continuously. However, innovation and knowledge are always intertwined that innovation occurs typically based on new knowledge while the application of new knowledge often bring about innovation [6]. Therefore, knowledge plays an irreplaceable role in the innovation process of enterprise.

M. Yang · W. Liu · H. Zhang (✉)
College of Management and Economics, Tianjin University, Tianjin 300072, People's Republic of China
e-mail: hyzhang@tju.edu.cn

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Innovation becomes complicated under the changing and competitive environment, increasingly severe technical innovation environment, shorter lifecycle of product and more and more diversified of the market demand. Conducting an innovation activity solely rely on knowledge in the technical field is insufficient. It is necessary for enterprise to have various areas of knowledge, such as market knowledge, suppliers and customer knowledge, the other competitor information, etc Therefore, the enterprise needs to absorb profitable information and knowledge from various sources to establish a vast and solid knowledge foundation [1]. To timely obtain the information and knowledge at a low cost, the enterprise must establish and maintain a good relational network with its stakeholders, in which the relationship capital in the network will become the key innovation resources for enterprise. Especially in China, with such a "heavy relations" traditional culture background, relationship capital plays a more prominent role. In such complex and dynamic environment, relationship capital has become the sources for enterprise to maintain competitive advantage for sustainable development [7]. Relationship capital is beneficial to the enterprise in obtaining useful knowledge and information from relative sources [12], which can promote the knowledge transformation through effective communication between enterprises and reduce the opportunity cost in the process of cooperation. However, obtaining knowledge does not mean using knowledge. The enterprise must have good absorptive ability for the sake of better apply knowledge. The so-called absorptive ability is that the enterprise can get important knowledge from the external sources and digest, transform and eventually commercially apply them [4]. Cohen and Levinthal in 1990 put forward the absorptive ability is very important to the innovation of enterprise [3]. Through the existing research we found absorptive ability can be divided into two kinds, technology-driven absorptive capacity and demand-pull absorptive ability. In China, due to the lack of the original enterprises low labor costs, a lot of foreign enterprises are attracted to our country. They have advanced technology and our local business makes profit by being OEM, which makes the market information and knowledge become particularly important. In this paper, absorptive ability discussed here is demand-pull absorptive ability. In existing researches, despite there are a small amount related research about the relation among absorptive ability, innovation and relationship capital set in the western developed economic background, they all focus on the impact of relationship capital and absorptive capacity on innovation performance [9], but mechanism of action of them is yet to seek. Yu [13] find that by increasing absorptive capability, it will systematically increase the slope and amplitude of the positive effects for firm innovation performance. Some current research assumes that the relationship between relationship capital and innovation performance is linear [10], but there are also people who hold a different view. In order to make up this deficiency and to be different from the previous studies, this paper aims at:

1. Exploring and proving the effects of Chinese enterprise relationship capital and demand-pull absorptive capacity on innovation performance;
2. Refining the absorptive capacity to potential ones and realized ones, this paper probes the potential absorptive capacity and the realized ones' intermediary role

in the positive effects of relationship capital to innovation performance, simultaneously, exploits mediated effect model based Chinese enterprise date;
3. Confirming promotion effect of potential absorptive capacity to realized absorptive capacity.

The rest of this paper is organized as follows. Section 84.2 presents a literature review of previous related research, and derives several hypotheses. Section 84.3 is devoted to constructing modeling methodology. Section 84.4 provides an empirical analysis. Finally, Sect. 84.5 offers concluding remarks.

84.2 Literature Review and Hypothesis

1. Literature Review
(1) Concept and measure of relationship capital
Relationship capital is derived from the social capital relational dimension, and it was initially based on mutual trust and friendly relations in the personal level. Relationship capital in this paper is the longitudinal relationship capital, namely the relational network established through the supply chain, mainly including relations with suppliers and customers. There is a common point for the measurement of relationship capital referred to the existing literature [2], as in Table 84.1.

(2) Concept and measure of demand-pull absorptive capacity
As the study about the absorptive ability starts later, the absorbency were falt into potential demand-pull absorptive capacity and realized demand-pull absorptive ability [14]. The former includes knowledge acquisition and digestion ability, and the latter includes knowledge transformation and the application ability. In addition, Nika and Lgor [8] proposes two classes of absorption ability: technology-driven absorption capacity and demand-pull absorption ability. This paper mainly studies the relationship capital of the enterprise in the longitudinal relational network, so it is about demand-pull absorptive ability. With reference to Jansen [5], potential demand-pull absorptive capacity and realized demand-pull absorptive capacity were measured [11] as in Table 84.1.

(3) Concept and measure of innovation performance
In terms of innovation performance, the academia has still not a unified concept. Researchers defined the innovation performance from the perspective of knowledge. Some Chinese scholars regarded innovation performance as the concept similar to the concept for the assessment of efficiency and effect of business operations. We put forward, innovation performance is the measurable output based on enterprise innovation, measured as in Table 84.1.

2. Hypothesis
Some hypothesis was proposed:
H1: Relationship capital has a positive impact on innovation performance.
H2a: relationship capital has the positive impact on potential demand-pull absorptive ability;

Table 84.1 Measurement sheet

Variable	Number	Item
Relationship capital	RC1	We cherish and active in the relations with customers and suppliers
	RC2	Customers and suppliers will consider this enterprise's interests when making great decisions
	RC3	Customers, suppliers and us trust each other
	RC4	Customers, suppliers and us often contact
Potential demand-pull absorptive ability	PA1	We have procedures and methods to acquire information of customers and suppliers
	PA2	We regularly hold special meetings with customers and suppliers
	PA3	We have special plans to train the staff mastering new knowledge
	PA4	We have special mechanisms to solve the conflict due to employees' different understanding and explanation of the new knowledge
Realized demand-pull absorptive ability	RA1	We have specific procedures and practices to help digest new knowledge and combine them with the existing knowledge
	RA2	We have special practices and structures to store and record new knowledge
	RA3	We put forward the improvement suggestions of products and processes according to the new knowledge
	RA4	We have systematic programs to develop new products by applying new knowledge
Enterprise innovation performance	IP1	Introduce into more new products
	IP2	The improvement of new product has good market reaction
	IP3	Introduce into more new production process
	IP4	The input-output efficiency is very high in new product development

H2b: relationship capital has the positive impact on realized demand-pull absorptive ability;
H3: potential absorptive ability has the positive impact on realized absorptive ability;
H4a: potential demand-pull absorptive ability has positive impact on innovation performance;
H4b: realized demand-pull absorptive ability has positive impact on innovation performance;
H5: relationship capital has positive impact on innovation performance through the intermediary role of demand-pull absorptive ability;
H6: relationship capital has positive impact on realized demand-pull absorptive ability through the intermediary role of potential demand-pull absorptive ability;

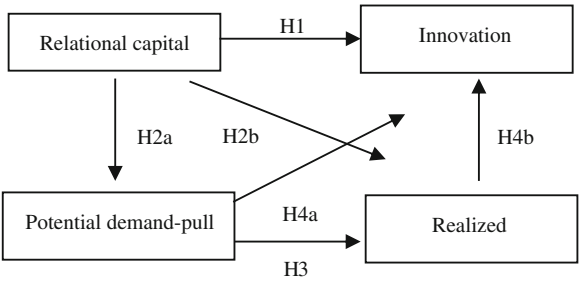

Fig. 84.1 Conceptual model

H7: potential demand-pull absorptive ability has positive impact on innovation performance through the intermediary role of realized demand-pull absorptive ability (Fig. 84.1).

84.3 Research Method

1. Research Design and Sample
This study tested the hypotheses using samples of manufacturing industries, including household electrical appliances, the automobile, the textile and electronic communication industries, which belong to the export-oriented manufacturing to a large extent, so the demand-pull absorptive ability is important for them. The selected firms were contacted by telephone calls, E-mails, faxes and letters. In order to insure the validity of the questionnaires, we asked the man who filling in the questionnaire to be the manager level or above and to leave their name and contact way. Data collection occurred from 2011 May to 2011 October. In total, 174 questionnaires were feed back, and 157 were valid, corresponding to an effective rate of recovery is 68.26 %.

2. Measurements
The measurements of all variables are referred to previously used measurement scales. Measuring construct includes 4 latent variables, namely relationship capital, potential demand-pull absorptive ability, realized demand-pull absorptive ability and innovation performance. Each latent variable contains a set of indicators (see Table 84.1). A 7-point interval rating scale system was used in the survey, with 7 equaling the highest extent of agreement.

84.4 Empirical Assessment

An exploratory factor analysis firstly was applied to examine the reliability and validity of these measures. Cronbach's reliability estimate test was used to proving the reliability of the scales and within-scale factor analysis was used to measure the

Table 84.2 Exploratory factor analysis

Indicators	ID α	α	Loading scores	Contribution rate
RC1	0.686	0.729	0.720	0.594
RC2	0.696		0.707	
RC3	0.637		0.781	
RC4	0.652		0.771	
PA1	0.715	0.724	0.701	0.589
PA2	0.662		0.738	
PA3	0.649		0.766	
PA4	0.617		0.804	
RA1	0.707	0.791	0.832	0.616
RA2	0.726		0.806	
RA3	0.783		0.705	
RA4	0.736		0.790	
IP1	0.841	0.869	0.833	0.719
IP2	0.806		0.891	
IP3	0.847		0.820	
IP4	0.834		0.845	

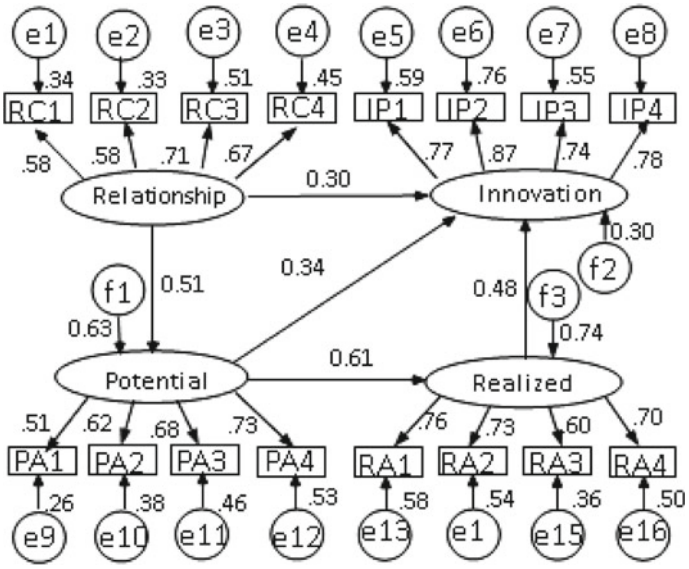

Fig. 84.2 Path diagram

extent to which the indicators measure the same latent variable. Table 84.2 presents the summary of the exploratory factor analysis.

This study uses SEM method to test the conceptual model. $2/\mathrm{df} = 1.687 < 2$, $CFI = 0.932 > 0.90$, $IFI = 0.941 > 0.90$, $GFI = 0.926 > 0.90$, $RMSEA =$

Table 84.3 Overview of hypotheses and findings

Hypotheses	Path	S.C	p	Findings
H1	RC→IP	0.30	0.007	Supported
H2a	RC→PA	0.51	0.001	Supported
H2b	RC→RA	0.06	0.347	Rejected
H3	PA→RA	0.61	0.008	Supported
H4a	PA→IP	0.34	0.006	Supported
H4b	RA→IP	0.48	0.005	Supported

$0.04 < 0.05$, it shows the data fits the model well. The final results are presented in Fig. 84.2.

The data showed that relationship capital has a positive impact on innovation performance and potential absorptive capacity, supporting hypotheses H1 and H2a, but the effect of relationship capital on realized absorptive capacity (H2b) is not significant. The weak result maybe explained: realized absorptive capacity comprises conversion ability and application ability. Conversion ability is the ability to combine the enterprise's original knowledge with the acquired knowledge to come out new knowledge that is useful for enterprise. Application ability is ability to apply the internalized knowledge to acquire commercial profits. Both of the abilities seem to have less relation with the external resource. It is the firm itself matter the most. The results also support H3, H4a and H4b. See Table 84.3. Hypothesis 2 is rejected through the above analysis, so the H6 is rejected. But an indirect effect exists between relationship capital and realized demand-pull absorptive ability through potential ones.

84.5 Conclusions

This research analyzes the impact of relationship capital and absorptive ability on the innovation performance. We refined the absorptive capacity to potential ones and realized ones, probing the potential absorptive capacity and the realized ones' intermediary roles in the positive effects of relationship capital to innovation performance. This study provides interesting results. The first conclusion is that relationship capital exerts a positive impact on innovation performance, and the demand-pull absorptive capacity plays a partial intermediary role in the positive impact. Innovation is a complex process and it is unwise to depend on the enterprise itself solely. Especially in China, with such a "heavy relations" traditional culture background, relationship capital is more important. So relationship capital is helpful for enterprise to acquire valuable information from relative sources and reduce the opportunity cost in the process of cooperation. However, obtaining knowledge does not mean using knowledge. The enterprise must have good absorptive capacity for the sake of better apply information.

The results also show that relationship capital exerts positive impact on potential absorptive capacity, but not on realized ones. It may be because that knowledge

identification and knowledge acquisition are close to the relations of enterprise with external resources such as customers and suppliers. Keeping good relations with them can be beneficial for enterprise to obtain useful knowledge and information in time, but it is mainly depend on the enterprise itself in the transformation and application because most of the work about transformation and application is completed inside the enterprise.

The third conclusion is that potential demand-pull absorptive capacity has a positive impact on realized ones and both of them exert positive impacts on innovation performance. The potential absorptive capacity helps enterprise learn and master knowledge obtained from external resources while the realized absorptive capacity helps to strengthen the combination of existing knowledge with obtained knowledge, and further develop, utilize, and even create new knowledge. Obviously, the development and utilization of knowledge is set up on the basis of the existing knowledge. So a strong potential absorptive capacity will positively affects the realized ones. Innovation is a process of creating new knowledge. Considering the innovation value chain, from the produce of new idea to the final success of innovation, every phase is closely correlated with information and knowledge. Both potential absorptive capacity and realized ones positively affect the innovation performance.

Further, this study shows that the realized absorptive capacity plays an intermediary role in the positive effect of potential absorptive capacity on innovation performance. Potential absorptive capacity concludes knowledge acquisition capacity and knowledge digestion capacity. Enterprise can master useful knowledge through these two abilities, but conducting an innovation activity depends on them solely is not enough. Enterprise must combine the existing knowledge with digested knowledge and then it can develop and apply new knowledge to an innovation activity.

Like all studies, this paper has some limitations that further study should over come. First, relationship capital in this study mainly includes two kinds of relationship, that is, the relation with customers and the one with suppliers. Although the result is appropriate in this study, it can't be generalize the findings to other relations such as relation with competitors, government, colleges. Future study should fully consider these relations. Second, we use cross-sectional data in this study. The variables are measured at the same moment, which may course problems. We should have a longitudinal study in future research to come to a better conclusion. And the one with suppliers, not including other relationships.

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