

## A Summary of Research on Absorptive Capabilities

Dan Bai<sup>1, a</sup> and Hongtao Li<sup>1, b\*</sup>

<sup>1</sup> School of Liaoning, Dalian University, Dalian 116622, China

<sup>a</sup> Baidan@dlu.edu.cn, <sup>b</sup> 921459057@qq.com

\*The corresponding author

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**Abstract.** Through the analysis of absorptive capacity at home and abroad, the definition and influencing factors of absorptive capacity are explored, which can make enterprises have a clear understanding in the development of absorptive capacity.

### 1 Research Background

With the rapid development of the economy, enterprises are facing severe competitive pressures. To maintain a lasting competitive advantage, enterprises must improve their ability to innovate. Innovation and knowledge are closely linked. How to absorb knowledge and improve innovation ability has become the key to improving innovation ability. This paper will combine the relevant literature at home and abroad to explore the definition and influencing factors of absorptive capacity, and provide enterprises with the ability to promote absorption. An advantageous reference.

### 2 Absorptive Capacity

The definition of absorptive capacity was first proposed by Cohen & Levinthal (1990) in the study of strategic management. They believe that absorptive capacity is the ability of companies to identify and digest new external knowledge and ultimately commercialize it [1]. Many scholars later made different corrections to the absorptive capacity based on Cohen & Levinthal's research.

Mowery & Oxley (1995) argues that absorptive capacity is a collection of abilities that transform tacit knowledge into explicit knowledge and transform external technology into internal use [2]. Korean scholar Kim (1998) proposed that absorptive capacity is the ability of enterprises to learn and solve problems, that is, the ability of enterprises to digest external knowledge and the ability to use new knowledge to solve practical problems [3, 4]. Zahra & George (2002) integrates other scholars' research on absorptive capacity. Based on dynamic competence theory, absorptive capacity is a series of practices and processes of enterprises. Enterprises can acquire, digest, transform and utilize external knowledge to obtain lasting competitive advantage. Lane, Koka & Pathak (2006) focused on the specification of the concept of absorptive capacity. They studied that absorptive capacity is the ability of an enterprise to learn external knowledge through three consecutive processes. (1) Exploratory learning recognition and understanding External potential new knowledge; (2) transformative learning to digest new knowledge; (3) developmental learning, using digested knowledge to create new knowledge and business results [5]. Todorova & Durisin (2007) revised the findings of Zahra & George (2002) based on Cohen & Levinthal's (1990) theory of absorptive capacity, and their findings found that absorptive capacity is a dynamic, continuous feedback process for firms to use knowledge, and It has increased the influence of external knowledge value recognition dimension and internal and external power relations on knowledge utilization [6].

Many scholars in China also have a very in-depth study of the connotation of absorptive capacity. Wang Wei believes that absorptive capacity is a relative ability based on the dual relationship between two parties. It is an inter-organizational ability embedded in the context of inter-organizational cooperation. The absorptive capacity is essentially a function of the company's own absorptive capacity and the dual relationship between organizations [7]. He Yongqing and others believe that the ability of knowledge absorption is the ability of the subject (including individuals or organizations) to learn internal and external useful knowledge, on the basis of their digestion, to form new knowledge that meets their needs and achieve a certain value, in which personal knowledge absorption ability It is the basis for the formation of corporate knowledge absorption capacity [8]. Wang Tianli et al. integrated the research of Cohen & Levinthal, Zahra & George and others, and finally concluded that absorptive capacity is a dynamic process in which enterprises identify and evaluate, digest and transform external new knowledge and finally integrate new knowledge into commercialized output. Ability [9].

This paper combines the research on the connotation of absorptive capacity by domestic and foreign scholars, and finally concludes that absorptive capacity is the ability of enterprises to identify, acquire, transform and create new knowledge, and this is a dynamic process.

### 3 Factors Affecting Absorptive Capacity

Through the study of the connotation of absorptive capacity, most scholars at home and abroad define the absorptive capacity from the individual level, the internal level of the enterprise and the inter-enterprise level to analyze and absorb the ability. For the influencing factors of absorptive capacity, we also proceed from these three levels.

(1) Personal level. Knowledge is basically acquired, transformed and integrated by people, but due to the differences between individuals, the degree of knowledge absorption is greatly different in the process of knowledge absorption. Cohen & Levinthal (1990) proposed that individual absorptive capacity is mainly influenced by factors such as knowledge base, background, and willingness to absorb. They believe that individual absorptive capacity is the basis of the company's absorptive capacity. Nooteboom et al believes that when employees with different knowledge backgrounds and values work together, the difference in knowledge helps employees discover opportunities and identify the value of new knowledge; but to a certain extent, differences in individual perceptions are reduced to opportunities. Identification of new knowledge and conflicts with the application of knowledge [10]. Based on the above analysis, we can find that the individual level factor is the basis of the company's absorptive capacity, so companies should increase their investment in employees and improve their absorptive capacity.

(2) The internal level of the enterprise. Cohen & Levinthal (1990) argues that the company's prior knowledge level is closely related to the company's knowledge absorption capacity. Van den Bosch (1999) believes that different organizational forms also affect absorptive capacity, functional organizations have higher efficiency in absorbing knowledge, but lack in the scope and flexibility of absorbing knowledge; The efficiency and range are not ideal, but have greater flexibility; while the matrix type organization has insufficient absorption efficiency, it has a comparative advantage in terms of knowledge absorption and flexibility [11]. Jansen et al. have found through empirical evidence that organizational practices and procedures have enabled employees to fix the way they work in their daily work, limiting their ability to explore and acquire new knowledge outside the enterprise, but to help members understand and think about shared knowledge. [12]. Liu Changyong and others have found that because knowledge ability is gradually accumulated, the new knowledge absorbed by enterprises is mostly related to their prior knowledge. Therefore, the prior knowledge of the enterprise will affect its attitude of absorbing new knowledge, and it may also make the enterprise new. The judgment of the future potential of knowledge is wrong. Another factor affecting absorptive capacity is the degree of investment in R&D products. Because the input of R&D products, enterprises will get more knowledge about products and technologies, which will help. Enterprises enter a deeper level of technical learning [13]. Based on the above studies by domestic and foreign scholars, we can conclude that the influencing factors at the internal level of the enterprise mainly include prior knowledge, R&D investment and organizational structure. These factors are not independent but related, so companies need to pay attention to these at the same time. Input of factors.

(3) Inter-enterprise level. Lane & Lubatkin analyzes the company's absorptive capacity from the relationship between "student enterprise" and "teacher enterprise". When the two companies have similar knowledge, "student enterprise" has the strongest absorptive capacity, "teacher enterprise" Then the absorption capacity is weaker [14]. Ahuja & Katila also have similar views. They point out that both the acquiring company and the acquired company should have more similar knowledge, which can promote the acquisition and knowledge integration of the acquired company's new knowledge [15]. Gulati's (2000) strategic network theory suggests that frequent communication with network partners increases the variety and breadth of information that organizations receive, while lack of contact with network partners limits organizational development, reduces organizational absorptive capacity, and reduces organizational choices [16]. Vinding (2006) believes that organizations often interact with other organizations to improve their organization's information and implied knowledge transfer capabilities. Compared with organizations with only vertical relationships, the former has improved absorptive capacity, and innovation performance and technology diffusion are more significant. [17]. Based on the above analysis, the influencing factors at the inter-enterprise level mainly include similar knowledge and cooperation factors.

By analyzing the impact of absorptive capacity at the individual level, the internal level of the enterprise and the inter-enterprise level, we can find that the individual level factor is the basis of the company's absorptive capacity, and the internal level of the enterprise is the key to the enterprise's absorption and transformation of knowledge, while the inter-enterprise level Factors are an important part of the company's ability to absorb further. With the continuous development of the times, the factors affecting the absorption capacity of enterprises are constantly changing, so enterprises should adjust their strategies according to changes to ensure their own long-term competitiveness.

### 4 Conclusions

The definition and influencing factors of absorptive capacity in recent years have become the hotspots of scholars at home and abroad. By studying a large number of literatures on absorption capacity at home and abroad, this paper summarizes the definition and influencing factors of absorptive capacity, and provides a good reference for enterprises to improve their absorptive capacity activities to promote their core competitiveness.

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## References

- [1] Cohen.W.M., & Levinthal, D.A Absorptive capacity: Anew perspective on learning and innovation [J]. *Administra-tive Science Quarterly*, 1990, (35): 128-152.
- [2] Mowery D C, Oxley J E, Silverman B S. Strategic alliances and interfirm knowledge transfer [J]. *Strategic Management Journal*, 1996 (17) (winter special issue): 77-91.
- [3] Kim L.Crisis construction and organizational learning: Capability building in cat Chingup at Hyundai Motor [J]. *Organization Science*, 1998, 9:506–521.
- [4]Zahra S, George G. Absorptive capacity: a review, reconceptualization, and extension[J].*The Academy of management Review*,2002,27(2):285-203.
- [5] Lane, P.J., B.R.Koka., S. Pathak. The reification of absorptivecapacity: Acritical review and rejuvenation of the construct. *Acade-myof Management Review*, 2006, 31 (4):833-863.
- [6] Todorova, G., B. Durisin. Absorptive capacity: Valuinga reconceptualization. *Academy of Management Review*, 2007, 32 (3): 774-786.
- [7] W.Wang. *Foreign Economics and Management. Research Status and Reorientation of Absorptive Capacity* [J].2007(07)
- [8] Y.Q.He and Q.P.Zhang The Connotation and Composition Dimensions of Knowledge Absorptive Capability: Based on the Perspective of Human Digestion and Absorption[J]. *Theory and Exploration*, 2012, 35(3): 32-36.
- [9] Interpretation of Absorptive Capacity Analysis and Misunderstanding[J]. Wang Tianli, Zhang Xiuzhen. *Foreign Economy and Management*. 2013(02)
- [10] Nooteboom B, Van Haverbeke W, Duysters G, et al. Optimal Cognitive Distance and Absorptive Capacity [J]. *Research Policy*, 2007 (36) : 1016-1034
- [11] Van den Bosch F AJ, Volberda H W, De Boer M. Coevolution of Firm Absorptive Capacity and Knowledge Environment: Organi-zational Forms and Combinative Capabilities [J]. *Organization Science*, 1999, 10 (5): 551-568
- [12] Jansen, Van Den Bosch, Volberda. Managing Potential and Real-ized Absorptive Capacity: How to Organizational Antecedents Matter [J]. *Academy of Management Review*, 2005, 48 (6): 999-1015
- [13] C.Y. Liu and H.M.Xie The Main Influencing Factors of Enterprise Knowledge Absorptive Capacity [J]. *Science Research*, 2003, 21 (3): 7-10
- [14] Lane P J, Lubatkin M. Relative Absorptive Capacity and Interor-ganizational Learning [J]. *Strategic Management Journal*, 1998, 19 (2) : 461-477
- [15] Ahuja G, Katila R. Technological Acquisitions and the Innovation Performance of Acquiring Firms: A Longitudinal Study [J]. *Strategic Management Journal*, 2001, 22 (3): 197-220
- [16] Gu lati, R., Nohria, N., Zaheer, A., 2000, “Stra-tegic networks”, *StrategicManagem ent Journal*21, pp.203-215.
- [17]V ind ing, A.L., 2006, “Absorptive capac ity and in-novative perform ance:a hum an cap ital approach”, *Econom icsof Innovation and New Technology*15, pp.507-517.