



Role of Knowledge Management in Developing Capabilities for Increasing Enterprise's Absorptive Capacity: An analysis

Dr.P.V.V.Satyanarayana, Faculty member, Dept of Management Studies, Jawaharlal Nehru Technological University Kakinada – 533 005

Abstract.

It is the key determinant for an enterprise competitiveness improvement in new economy or knowledge economy and we call it as Knowledge. Having this in mind, effectiveness and efficiency in managing this resource optimally are especially important. Because of that, knowledge management system is a special resource. Knowledge management is a basis and a mechanism for the development of knowledge-based capabilities and other knowledge related capabilities, but other capabilities and expertise of an enterprise (production, marketing, distributive, innovative and other) as well. The progress of knowledge based capabilities and capabilities related to efficient and effective knowledge exploitation is important for increasing an enterprise's absorptive capacity. Therefore, the aim of this paper is to analyze the role and significance of knowledge management in the development of different capabilities, as they influence the increase of an enterprise's capacity. The significance of this research is reflected in the fact that the absorptive capacity affects an enterprise's innovativeness, and at the same time has an impact on maintaining and improving its competitive position.

Key Words: *knowledge, management, capabilities, absorptive capacity, exploitation*

1. Introduction

Knowledge management, as a process through which an organization generates the value, has become the imperative of modern business. Knowledge management should be seen as a set of critical issues of an enterprise's adaptation and existence in conditions of constant changes in the contemporary environment and information technologies, on the one hand, and creative and innovative potentials of people, on the other. Taking into account the fact that the resources are the basis of a business activity, we can say that

the aim of knowledge management is effective and efficient exploitation of knowledge as the key resource in knowledge economy, but also the other enterprise's resources. The main challenge of modern enterprises is, therefore, defining, measuring, improving, evaluating and effective and efficient knowledge management. For providing valuable knowledge as a resource for innovation creating, enterprises should also improve their capabilities of knowledge acquisition, assimilation, transformation and exploitation. In this sense, knowledge management is very important for an



enterprise's absorptive capacity. The key starting hypotheses and positions in this paper claim that knowledge management contributes to creating knowledge based and knowledge related capabilities, and that these capabilities are a factor for increasing an enterprise's absorptive capacity.

2. Absorptive Capacity of an Enterprise

One of the most important questions is how organizations exploit external knowledge for their own growth and development. In the environment full of potential innovation sources, the management team should be able to recognize and use them. However, organizations very much differ in the capability of using stimulation signals from the environment. In fact, that is an enterprise's ability to reorganize the value of new, external information, assimilate them and exploit in commercial purposes. The essence is relating the existing and new knowledge of an enterprise. Authors (*Freeman, Soete, 1997; Bell, Pavitt, 1993; Lall, 1992*) have contributed to the area of research about innovation as a result of the process of "technological learning", which is used for acquisition and exploitation of new technological knowledge.

The measure of searching, acquiring and exploiting capabilities of new external knowledge is actually a *enterprise's absorptive capacity* (*Tidd, Bessant, 2009*). In other words, a enterprise's ability to estimate external

information, assimilate and commercialize them determine absorptive capacity (*Cantner, Joel, 2007, 8*). The essence of absorptive capacity is in cumulated learning and developing capabilities of searching, acquiring, assimilating and exploiting knowledge in terms of: routines, structures, processes, politics and procedures. Enterprises differ in learning abilities and in ratios (size) of absorptive capacity. Absorptive capacity affects an enterprise's development and competitiveness.

Absorptive capacity, among other things, includes a set of organization routines and processes that are used for creating dynamic abilities in an organization. In order to achieve a more efficient integration of external knowledge in an organization, improvement of processing system of information and knowledge is required. The form of organizational structure and combination of different abilities of an enterprise (production, marketing, logistical...) are important elements of its total absorptive capacity. Absorptive capacity of an enterprise changes and evolves with the changes of the, so called, knowledge environment.

In their research, the authors (*Todorova, Durisin, 2007*) also focus on dynamic characteristics of the concept of absorptive capacity, studying the relation between identifying and acquiring relevant knowledge and ability of applying that knowledge in commercial purposes. Furthermore, they claim that knowledge transformation should be seen not as a consequence but as a complementary process to



"knowledge assimilation". These authors also emphasize the role of the mechanism of socialization in the dynamic model of absorptive capacity.

Knowledge-Based Capabilities as Determinants of an Enterprise

The main point of the absorptive capacity research is that this complex concept includes multiple and different activities and routines related to searching, acquiring, assimilating and implementing knowledge. The connection between them is important because knowledge search and acquiring capabilities (*potential absorptive capacity*) may not lead to creating and realizing of innovation. In order for the process to be complete, knowledge assimilation and exploitation capabilities are also required (*realized absorptive capacity*).

Enterprises, therefore, should invest in the development of absorptive capacity or potential for "organizational learning". R&D should have the role in the development of enterprise's abilities to identify, absorb and apply knowledge from the environment, that is, to improve its absorptive capacity. Capabilities of external knowledge acquisition, knowledge assimilation, knowledge transformation and knowledge exploitation are the key aspects of a enterprise's absorptive capacity, which are built on each other (Zahra, George G., 1990).

a. Knowledge acquisition capability

Knowledge acquisition is an important

part of the process of increasing absorptive capacity, because that is the way to bring in new knowledge into an enterprise. This new knowledge forms the basis for future innovation activities and affects other creative capabilities, knowledge exploitation, and future absorptive capacity. Two basic types of knowledge acquisition are market knowledge acquisition (*direct* and *indirect*) and technological knowledge acquisition. Although every enterprise has got so called static stock of knowledge, based on its human resources, new "flows of knowledge" should also be formed for knowledge acquisition. The reason for this is learning about new market chances and technological perspectives. Introducing the key needs and market requests to the management improves an enterprise's innovative ability in the future period. The same goes for new technological knowledge acquisition.

Market knowledge acquisition

Market knowledge acquisition through the process of learning assumes learning about market potentials and application of appropriate methods for gathering information about a certain market. *Direct market knowledge acquisition* is achieved by a direct communication of an enterprise with its clients. Enterprises should make more effort in learning about clients' wishes, especially when they tend to change. *Indirect market knowledge acquisition* means getting knowledge from different sources, such as business contacts with enterprise's partners or experts, fair



visiting, using network contacts and so on. Knowledge that comes directly from clients is very important. Besides, entrepreneurs prefer using informal sources of innovation, such as professional journals, because they provide information about general trends.

Technological knowledge acquisition

Technological knowledge acquisition can be achieved through internal activities (R&D and other activities). The less formal activities (conference, partnerships, etc.) can also be the source of new technological knowledge acquisition. Technological knowledge acquisition is primarily realized through a firm's R&D activities, specialized courses and appropriate employees training and so on. Knowledge acquisition through informal methods and technological investment can be seen as a more expensive than a "simple" conversation with clients. A firm's size is an important factor for technological knowledge acquisition because this usually is an expensive activity. *Saemundsson* claims that there is a pressure in small and/or new enterprises between possible benefits from new technological knowledge acquisition and its costs (*Saemudsson, 2005*). Therefore, having a greater critical amount of capital and human resources (and other benefits coming with the enterprise's size) can help the financing activity for technological knowledge acquisition.

b. Knowledge assimilation capability.

Besides the knowledge acquisition capability, knowledge assimilation capability is essential. Assimilation means understanding of knowledge as economic resource for generating a value and innovations. Assimilation is a process where information (knowledge) gets a certain meaning. If an enterprise cannot assimilate knowledge that means that, it is not able to use acquired knowledge in the right way. Assimilation is realized by analysis, processing, transformation and interpretation of knowledge. It is important for narrowing the gap between the needed knowledge and the existing knowledge. Knowledge assimilation means understanding the value or importance of acquired knowledge for future business. The lack of knowledge assimilation means that an enterprise isn't able to exploit any new gained knowledge or recognize its importance.

Market knowledge assimilation means that an enterprise's employees can understand the main instruments of the competitive struggle, to understand what the acquired knowledge means to them and to process and incorporate it to more formal, concrete forms – business processes and innovations of products/services that are acceptable on the market. First, market knowledge assimilation depends on the level of direct and indirect market knowledge acquisition. Market knowledge assimilation provides a possibility to others in an enterprise to understand the main issues about market and to process the acquired knowledge more



formally.

There are many benefits from knowledge assimilation. *Galbraith* suggests that assimilation of knowledge will reduce the gap between the knowledge needed for decision-making and the firm's available knowledge (*Galbraith, 1973*). Knowledge assimilation also provides a better understanding among managers and other employees because more people understand main problems of newly acquired knowledge. More benefits from knowledge assimilation are that more individuals in an enterprise have acquired knowledge, which makes it easier to locate and reactivate it. Expanding and transferring acquired and assimilated knowledge among members of organization is a good basis for developing new creative solutions. The greater market and technological knowledge is the key determinant for their better assimilation. Larger enterprises can tend to "storage" knowledge in a more formal manner than smaller enterprises, for instance, in data bases.

b. Knowledge transformation capability.

Knowledge transformation stands for the ability to complete a set of different knowledge that has previously been segmented and scattered or to combine elements of knowledge in a new way. To sum up, knowledge transformation includes joining previously scattered sets of knowledge and their recombining. There are many benefits from adequate

knowledge transformation. Crossing the areas of knowledge can initiate generating a completely new knowledge from new fields and provide ideas for further knowledge application and new solutions for meeting the needs of market.

The relation between knowledge assimilation and transformation is very important. There are three elements of knowledge transformation: a) insight into existing knowledge resources, b) synthesizing knowledge and c) combination of knowledge resources (*McKelvie, 2007*). *Technological and market knowledge assimilation* is important for predicting all of the three. *Direct market knowledge acquisition* can be important and positive. For instance, in the process of combining, aggregating and reviewing previous knowledge, enterprises can tend more to use new knowledge that has still not been adopted.

Knowledge acquisition can be very important for knowledge synthesizing. For instance, the potential for using the existing technological projects and abilities can depend very much on the newest technological knowledge acquired by a firm. In addition, technological knowledge assimilation can sometimes have a greater influence on knowledge transformation than market knowledge assimilation can. This is the case when assimilated knowledge, which is the most important for creating knowledge transformation, is technologically related. The starting point of knowledge transformation is, therefore, techno-



logical knowledge acquisition and assimilation capability

d. Knowledge exploitation capability.

Knowledge exploitation capability means that a firm is able to incorporate it in its operations and processes. Exploitation emphasizes a certain application of creative, that is, extended knowledge in an enterprise. The result of the knowledge transformation process is integrated knowledge as interrelated fields of knowledge, which could be used for commercial ends launching prototypes of products, ideas for products or patent application. Namely, knowledge exploitation capability is the ability to develop ideas – how, where and when knowledge can be used to meet market needs. A higher level of knowledge exploitation capability and its application in business processes lead to a certain result – innovation. Innovation is also a new combination of resources, new product, new markets penetration, new methods of production and distribution, but also every other change in executing business processes that can contribute to improving business performances and firm's competitiveness. Modern organization in the era of knowledge is the one that learns and acts based on information and available knowledge in the best possible way.

3. Technological and Market Dynamism & Knowledge-Based Capability

The results from the study (McKelvie,

2007) expand the literature in which the basic hypothesis suggests that knowledge resources are more relevant at rapidly changing markets. However, this research implies *that the level of technological changes is an imperative for new knowledge acquisition*, and not the change in levels of dynamism of market. Other conclusions of this study are reflected in the following important issues.

Market dynamism positively affects the development of knowledge acquisition capability. Sometimes firms prefer to keep pace with changes of dynamic market through indirect methods of knowledge acquisition, rather than through direct conversation with clients. In this case, the assumption is that a firm's management relies more on its own instincts and predictions of future based on information not coming from clients but from other sources. This can also mean that clients have difficulties in expressing their concrete future demands. Technological dynamism has an important role in developing knowledge acquisition capability. That is, more various mechanisms of knowledge acquisition are being exploited in more dynamic technological environment of a firm.

All types of new knowledge acquisition are included (direct, indirect and technological), and not only technological knowledge acquisition, which might be a logical assumption.

Market dynamism can affect negatively knowledge assimilation



capability in a firm. When the market changes largely, dissemination of knowledge to others in organization is smaller, because knowledge expires faster. Enterprises usually emphasize the improvement of capabilities of acquisition and exploitation of new, more relevant knowledge. *Technological dynamism* is very important for knowledge assimilation capability, especially for technological knowledge assimilation. This supports the hypothesis that technological knowledge forms the basis for a firm's behavior in dynamic industries. The decision about changing technology is a part of the decision about technological knowledge acquisition and assimilation. It has been considered that enterprises that are new on the market participate more actively in market/technology knowledge assimilation, compared to older enterprises. Knowledge assimilation helps managers of these firms in better understanding external determinants and the relevance of acquired new knowledge and overcoming their insecurity.

Market dynamism is negatively related to combining knowledge within the process of knowledge transformation. This means that enterprises which operate in the environment with great changes in demand do not invest much in combination of knowledge. The reason for this, as long as clients' wishes and needs are considered fast changing, is that new firms simply cannot keep pace with that. Furthermore, it can be possible that there is no point in

investing in activities on these markets. Therefore, enterprises try to avoid these problems. Namely, when market changes are great, firms do not join knowledge of employees to discuss market related problems. Market dynamism can also negatively affect knowledge combination due to the characteristics of the knowledge combination process. For example, combining employees with different business functions or integrating different organization units in a firm requires adequate planning and organization. When a firm moves away from the predictable market in which it is possible to plan, than knowledge combining becomes difficult. Therefore, on the markets that are more dynamic, firms should think beyond their usual form of behavior. One option is that firms improvise more and become more flexible in knowledge combining. For other transformation capabilities (reviewing previous knowledge and knowledge synthesizing), there is a possibility for their conducting, in spite of market dynamism. However, combination of knowledge resources is much more difficult. In the study mentioned above (McKelvie, 2007), only *technological dynamism* is important for knowledge transformation capability.

Market dynamism very positively affects knowledge exploitation capability. Knowledge exploitation is the best on dynamic markets. In addition, technological dynamism is very important for the development of knowledge exploitation capability. Knowledge is the most important in



dynamic industries, but this is primarily related to technological knowledge. If the dynamism of technology increases, the influence of acquisition of technological knowledge on knowledge exploitation capability will be stronger. In other words, if the level of dynamism of technology increases, technological knowledge becomes more relevant (McKelvie, 2007).

4. Knowledge Management & Increasing Absorptive Capacity of an Enterprise

It is necessary to analyze the essential ways of influencing knowledge management on absorptive capacity. In that analysis, a key fact is that knowledge management has a very important and positive influence on a firm's absorptive capacity.

Knowledge management improves and integrates acquisition, assimilation, transformation and exploitation of external knowledge capabilities and by this improves a firm's absorptive capacity (Figure 2). The challenge for a firm's management but also its knowledge management system is to transform external and available knowledge, which is ready to use in business operations and processes. Many enterprises take part in activities of providing and internalizing this knowledge. However, the question is what a firm should do to transform its existing knowledge.

a) *Knowledge management improves identifying, absorption and exploiting useful external knowledge that is the result of business cooperation of an*

enterprise. Having in mind the case of a firm's cooperation in joined R&D, the authors (Cantner, Joel, Schmidt, 2009) use data from German innovation study „Mannheim Innovation Panel“, and find evidence about the importance of knowledge management for improving the absorption of external knowledge. It is confirmed that adequate human resources and knowledge management improve a firm's absorptive capacity. In this case, absorptive capacity is seen as the result of an enterprise's realized cooperation in the field of R&D. The ability of organizing a firm's cooperation in the field of R&D with the aim of a successful external knowledge absorption and integration, can greatly contribute to an enterprise's innovation success.

b) *Knowledge management improves a firm's growth willingness, which has a positive influence on knowledge acquisition, assimilation, transformation and exploitation capabilities (Figure 2).* The dimensions of absorptive capacity are not realized by them-selves. Many of those capabilities comprise a set of actions and investments that require time and resources. Furthermore, willingness and motivation of the members of organization are essential in the process of a firm's growth. In that sense, it is considered that a higher level of a firm's employees' willingness and motivation stands for a greater positive influence on knowledge acquisition, assimilation,



transformation and exploitation capabilities.

- c) Growth willingness, as it has been said, is important in the process of *knowledge acquisition*. Direct collection of knowledge from clients is important for all firms regardless of their differences in achieving the desired growth rate. Every enterprise that contacts its clients will acquire knowledge to a certain level in this way. Growth willingness also positively affects *market knowledge assimilation*, because firms analyze market changes and knowledge as a specific base for planning and meeting clients' needs. However, growth willingness does not necessarily influence *technological knowledge assimilation*, for instance, when a firm is liable to technological changes. In that case, discussions can be directed toward research and understanding of what happens on the market, and not toward trying to be innovative.

As for the knowledge transformation capability, the role of growth willingness can be less significant for *reviewing previous knowledge*. This implies that growth oriented firms invest less effort and means in reviewing their previous stocks of knowledge. These enterprises look ahead and invest more in new knowledge acquisition globally (through in-direct methods and technological investments). In addition, these enterprises primarily search

future opportunities and chances externally, not internally. Growth willingness is also important for knowledge exploitation capability, especially when direct market knowledge acquisition capability is less developed.

5. Conclusion

Sustainable competitive advantage in 21st century, among other things, can be attained through efficient and effective knowledge management. The essence of knowledge management lies in executing certain processes and activities of an enterprise with the aim of creating capabilities that will improve effectiveness of creating and efficiency of exploiting knowledge, increasing competitiveness and value on the market. Knowledge creating (acquisition) capabilities, knowledge assimilation, knowledge transformation and knowledge exploitation capabilities are the key determinants of the volume of an enterprise's absorptive capacity. Knowledge management improves and integrates external knowledge acquisition, assimilation, transformation and exploitation capabilities and by this improves absorptive capacity of a firm. Knowledge management increases an enterprise's growth and innovation willingness, which positively influences capabilities of knowledge acquisition, knowledge assimilation, knowledge transformation, and knowledge exploitation in the future. In addition, it can provide creating potential for



increasing the effectiveness of using the existing tangible and intangible resources and differentiating an enterprise's offer and its innovative success by improving capabilities and absorptive capacity.

References

1. Aldrich, H.E., & Zimmer, C., *Entrepreneurship through social networks*. In D. Sexton & R. Smilor (Eds.), *The Art and Science of Entrepreneurship*, Cambridge, MA: Ballington, 1986.
2. Bell, M., Pavitt, K., Technological Accumulation and Industrial Growth. *Industrial and Corporate Change*, 2 (2), 1993, pp. 157-211.
3. Cantner, U., Joel, K., Jena Economic Research Papers: *Functional Chains of Knowledge Management - Effects on Firms' Innovative Performance*, Friedrich-Schiller-University and the Max Planck Institute of Economics, Jena, 2007.
4. Cantner, U., Joel, K., Schmidt, T., *Discussion Paper Series 1: Economic Studies*, Paper provided by Deutsche Bundesbank, Research Centre, No. 16, 2009.
5. Cohen, W., Levinthal, D., Absorptive capacity: a new perspective on learning and innovation, *Administrative Science Quarterly*, 35 (1), 1990, pp. 128-152.
6. Freeman, C., Soete, L., *The Economic of Industrial Innovation*. The third edition, MIT Press, Cambridge, MA, 1997.
7. Galbraith, J., *Designing Complex Organizations*. Reading, MA: Addison-Wesley, 1973.
8. Lall, S., Technological Capabilities and Industrialization. *World Development*, 20 (2), 1992, pp. 165-186.
9. McKelvie, A., *Innovation in New Firms: Examining the role of knowledge and growth willingness*. JIBS Dissertation Series No. 038, Jönköping International Business School, Jönköping University, 2007.
10. Saemundsson, R., On the interaction between the growth process and the development of technical knowledge in young and growing technology-based firms. *Technovation*, 25, 2005, pp. 223-235.
11. Slavković M., "Strengthening enterprises competitiveness through development of knowledge management concept", *Facta universitatis, Series: Economics and Organization*, Vol. 5, No. 2, 2008, pp. 167-172.
12. Smith, K.G., Collins, C.L., & Clark, K.B., Existing knowledge, knowledge creation capability, and the rate of new product introduction in high-technology firms. *Academy of Management Journal*, 48(2), 2005, pp. 346-357.
13. Swan J., Newell S., Scarborough H.,



- Hislop, D., Knowledge Management and Innovations: Networks and Networking. *Journal of Knowledge Management*, Vol. 3, No. 4, 1999, pp. 262-275.
14. Tidd, J., Bessant J., *Managing Innovation - Integrating Technological, Market and Organizational Change*. Fourth Edition, John Wiley & Sons, Ltd., 2009.
15. Todorova, G., Durisin B., Absorptive capacity: valuing a reconceptualization. *Academy of Management Review*, 32 (3), 2007, pp. 774-796.
16. Yli-Renko, H., Autio, E., Sapienza, H. Social capital, knowledge acquisition, and knowledge exploitation in young technology-based firms. *Strategic Management Journal*, 22(6), 2001, pp. 587-613.
17. Zahra, S.A., George, G., Absorptive capacity: A review reconceptualization and extension. *Academy of Management Review*, 27(2), 2002, pp. 185-203.