Published in Slovak Republic
European Journal of Economic Studies
Has been issued since 2012.
E-ISSN: 2305-6282
2018, 7(2): 89-97

DOI: 10.13187/es.2018.7.89
www.ejournal2.com

Exploring the Micro Foundations of Absorptive Capacity in Knowledge Transfer Projects: an Operations Management Perspective

Adis Murtic [a], Ermin Cero [b], Nedim Celebic [b], Sanel Halilbegovic [b, *]

[a] Stockholm School of Economics, Stockholm, Sweden
[b] International Burch University, Sarajevo, Bosnia and Herzegovina

Abstract

Planning and executing effective knowledge transfer with external organizations is increasingly relevant for most companies. However its complexity determines high failure rates. By taking the perspective of the recipient organization in knowledge transfer projects, this paper explores the project management & organization antecedents underlying the development of a firm-level capacity in absorbing external knowledge. A conceptual framework is developed and illustrated through a case study of a multinational energy company transferring technical and organizational knowledge from its English to its Swedish subsidiary. Combining evidence from the case study and findings from prior studies, research propositions are developed.

Keywords: knowledge transfer; absorptive capacity, project management, antecedents of capacity, ambidexterity, planning.

1. Introduction

Planning and executing effective knowledge transfer with external organizations is increasingly relevant for most companies (Argote, 1999, Kogut and Zander, 1992). Benefits from successful knowledge transfer include reduction of research and development (R&D) costs and risks, enhanced proficiency and speed in new product development, leverage of multidisciplinary technologies and know-how that allow for flexible manufacturing strategies. The world largest consumer goods company Procter & Gamble, for instance, has recently launched a new strategy named Connect & Develop, calling for 50 percent of all new products incorporating externally acquired technological knowledge (Huston, Sakkab, 2006).

Notwithstanding its increased relevance in firms' operations, knowledge transfer is a highly complex activity. According to a field study, 10 out of 32 knowledge transfer projects failed mainly because of inadequate pre-transfer planning and post-transfer control (Galbraith, 1990). In the light of this complexity, there is a need for appropriate management and organization of knowledge transfer between units, both at the donor and at the recipient side (Easterby-Smith et al., 2008, Argote et al., 2003). In this paper we take the perspective of the recipient side and we draw on the theoretical concept of absorptive capacity.

Cohen and Levinthal, 1990 define absorptive capacity as the ability to recognize the value of new knowledge, assimilate it and apply it for commercial ends. According to the authors, absorptive capacity is mainly built upon previous investments in internal R&D. Absorptive capacity of the receiver has a key role for the successful outcome of knowledge transfer (Tsai, 2001; Gupta,

* Corresponding author
E-mail addresses: sanel.halilbegovic@ibu.edu.ba (S. Halilbegovic)

Govindarajan, 2000). A review of the literature on absorptive capacity (Lewin et al., 2011, Volberda et al., 2010) has revealed two recurrent characteristics of previous studies: first, they focus on the firm level of analysis, proxying absorptive capacity with aggregate variables like R&D expenditures or size of patent portfolios e.g., (Mowery et al., 1996); second, they take a strategic management perspective as they explore the strategic mechanisms to develop absorptive capacity and its effect on competitive advantage e.g., (Van Den Bosch et al., 1999). Therefore, the problem with prior research is that it fails to capture the micro dynamics of absorptive capacity, which builds on the knowledge and skills of individuals, on their interaction and on the micro-activities executed to transfer knowledge in well-defined projects.

In the light of the above limitation, the purpose of this paper is study absorptive capacity at a micro and operational level. More specifically, the paper aims to bring absorptive capacity into the realm of operations management by exploring the micro foundations of absorptive capacity at the project level, which has been almost completely neglected by prior research (Jansen et al., 2005). This, in our opinion, represents an interesting and useful research effort for the following reasons. First, knowledge transfer between units usually occurs through the execution of day-to-day operational activities that are part of well-defined projects in terms of start point and end state, goals and resource allocation; second, real world observation shows that managers attempt to foster knowledge transfer by making use of operations and project management tools; third, knowledge transfer heavily builds on interactions between project team members, in whose minds resides predominantly tacit knowledge.

To achieve its goals, the paper develops a conceptual framework, which aims to identify the project management & organization antecedents underlying the development of a firm-level capacity in absorbing external knowledge. The model is then illustrated through a case study of a multinational energy company, which is active in transferring technological knowledge across its local subsidiaries. Combining evidence from the case study and results of prior studies on technology management, research propositions are developed.

2. Literature review

Absorptive capacity (AC) has recently emerged as a central theme in strategy and organization research (Lane et al., 2001). AC-related issues have been discussed in several streams of research, e.g. economics and management of innovation, business performance, knowledge transfer and organizational learning (Tsai, 2001; Lane et al., 2001; Gupta, Govindarajan, 2000).

Seminal papers have conceptualized the multidimensional nature of AC (Cohen, Levinthal, 1990; Zahra, George, 2002). In their renowned article, (Cohen and Levinthal, 1990) distinguish the recognition, assimilation and exploitation components of absorptive capacity and advance that AC is not resident in any single individual but consist of links across a mosaic of individuals' absorptive capacities. Later, (Zahra, George, 2002) conceptualize AC as a dynamic ability characterized by two dimensions. The former, potential AC, captures the firm ability and effort to identify external knowledge useful for the firm and to assimilate it inside its routines. The latter, realized AC, consists of transforming and exploiting of newly acquired knowledge. In particular, key activities of realized AC encompass adaptation, combination of new and existing knowledge in the firm and further incorporation of new knowledge into ongoing operations (Zahra, George, 2002).

In reviewing AC literature we found two gaps. First, much of the literature has tried to capture AC through different firm level variables using proxies such as R&D expenditure, number of employee in R&D department (Meeus et al., 2001; Tsai, 2001) or the size of patent portfolio (Ahuja, Katila, 2001; Mowery et al., 1996). The rationale behind these choices is that firms with a larger and richer endowment of knowledge resources have developed appropriate routines and processes that facilitate the acquisition and the use of knowledge from external sources, thus resulting in higher levels of AC (Mowery et al., 1996, Rao and Drazin, 2002).

Second, most studies have focused on the competitive benefits of AC, i.e. on the impact of AC on other organizational and financial performance. For instance, AC has been found to enhance the learning ability of a firm (Lane, Lubatkin, 1998) and to improve the speed and frequency of innovation, as well as its incremental nature(Helfat, 1997). Furthermore, (Lane et al., 2001) show that through AC, firms apply new knowledge to commercial ends and thus achieve superior financial performance. By assessing the role of AC as a source of competitive advantage, prior research has mostly adopted a strategic management perspective to AC (Mowery et al., 1996; Lyles

and Salk, 1996). Conversely, an operations management approach to AC is lacking: only few studies have analyzed the managerial antecedents of AC, i.e. those managerial and organizational practices that underlie the development of the ability to absorb and exploit external knowledge. The most notable of these is the paper by (Jansen et al., 2005), which analyzes the differing effects of managerial antecedents on the different dimensions of AC, potential and realized. The authors show that coordination mechanisms like cross-functional interfaces and job rotation are positively linked to potential AC while more systematization practices, e.g., formalization, as well as socialization practices, e.g., connectedness, enhances realized AC. However, no empirical evidence is provided about the micro foundations of AC at the project level, notwithstanding the fact that knowledge transfer occur through the execution of day-to-day operational activities, which are part of well-defined projects, and AC is built through interactions between project team members and the combination of their tacit knowledge.

To overcome this limitation in prior research, this paper takes a project level perspective and search for managerial micro foundations of AC in the realm of operations and project management. To this aim, it develops a conceptual framework consisting of two major building blocks: project management antecedents and absorptive capacity, distinguished between potential and realized AC. The framework will be presented in the next section.

Conceptual framework

Figure 1 shows the conceptual framework of the paper. The rationale behind the framework is that appropriate management of the different aspects of a knowledge transfer project enhances the ability to identify, assimilate, transform and exploit new external knowledge. Consistent with (Zahra and George, 2002) conceptualization, AC is thus intended as a dynamic capability which is built and enhanced through managerial actions that influence individual learning as well as redefine and deploy organization's knowledge-based assets (Floyd and Lane, 2000, Argote et al., 2003).

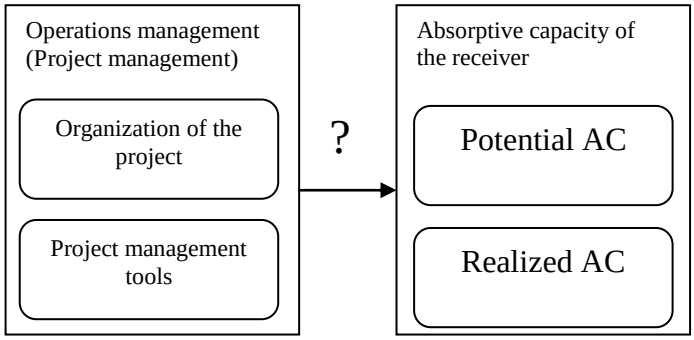

Fig. 1. Framework for studying project management practices as antecedents of AC

The dependent construct is AC, divided into its potential and realized components (Zahra, George, 2002). Potential AC consists of acquisition and assimilation of external knowledge and realized AC consists of transformation and exploitation of assimilated knowledge. Though being closely related, potential and realized AC are different in nature: the former is mostly intended to enrich a firm's knowledge base through outside-in acquisition of new external knowledge and its relation with internal existing one, whereas the latter is concerned with turning the knowledge potential into commercialized products and ultimately profits. Through realized AC, firms can effectively use assimilated knowledge in structured way, by incorporating it into existing processes and routines of the firm.

Potential AC and realized AC have complementary roles and both have to be in place for AC to exist in a firm. Firms focusing only in acquiring new knowledge will increase their knowledge base but without gaining benefits from its exploitation. On the contrary, firms that focus only on the realized part of AC, run the risk of lacking competence and technologies in the long term (Ahuja, Lampert, 2001).

The independent block includes the operations and project management micro foundations, i.e. the decisions and activities performed by the recipient organization in terms of knowledge transfer project planning, execution, monitoring and organization. We divide project management

antecedents in two dimensions: project organization and project managerial tools. Both are deemed to be the most influential instruments that project managers use to manage and execute the project. The organization of the project includes decisions regarding the organizational structure of the project, from pure functional to pure project forms (Köster, 2010), and the mechanisms through which the project is related to the existing organization of a firm. Depending on the organizational solution of the project, the firm signals whether it is the functions that contribute to the knowledge absorption or the knowledge transfer project itself, that dominate the way the transfer activity is managed and executed (Meredith, Mantel, 2010).

The project management tools employed to manage and execute a project can be divided into planning and controlling. Planning includes identifying the activities needed to accomplish the desired outcome, estimating time schedule and allocating resources within given constraints and ascertaining the relationships and dependencies between activities within the project. Basically, to do planning is to predict and foresee what should be done and when (Meredith, Mantel, 2010).

Controlling involves monitoring the project in order to check its progress, measuring project performance against its plan and, in case of need, take necessary actions to minimize the gap (Köster, 2010). Controlling is the act of dealing with inconsistencies between plan and reality. Evaluating why these inconsistencies have occurred is also part of the controlling and the evaluation can lead to re-planning or termination of some activities (Meredith, Mantel, 2010)

3. Methodology

Consistent with the exploratory nature of this study, our empirical analysis is based on a single case study methodology. We report and discuss the experience in a deliberate and organized knowledge transfer project of a firm that we have investigated in the scope of our research. Of course major limitations of a single case study method are validity and reliability (Yin, 2008). However, this methodology gives us the opportunity to gain an in-depth understanding of a complex phenomenon under particularly insightful circumstances, allowing us to identify the still elusive relationships between project management antecedents and AC.

The case study has an illustrative purpose. As (Siggelkow, 2007) argues, this use of the case study allows the reader to see a practical example of the constructs in the theoretical framework, of their relationships, and to understand how the conceptual argument might be applied to other empirical settings. In order to pursue this illustrative goal, the selected firm must be “special”, i.e. must provide empirical insights that other cases would not provide (Siggelkow, 2007).

Therefore we have carefully chosen a case where we have had full access in terms of meetings and documents and we had the possibility to interview project members without restrictions. The case at issue is a knowledge transfer project where a multinational company operating in energy, health, building and industrial sectors divested a foreign subsidiary in England and aimed at transferring relevant technological and organizational knowledge back to the division’s headquarters in Sweden. Specifically, the knowledge to be transferred, regarded information and competencies about how to design and manufacture small gas turbines for industrial power generation. The project lasted for 20 months, during which we have observed and analyzed the project longitudinally. This has allowed us to track cause and effect dynamics between project management antecedents and the dimensions of AC in real time (Leonard-Barton, 1990).

The recipient organization was organized in a project team with members covering disciplines such as engineering (sub-divided in electrical and mechanical), purchasing, quality assessment, logistics, documentation, assembling and manufacturing. These disciplines were the criteria used to divide the main project into constituting sub-projects. All sub-project managers were reporting to the head project manager whose responsibility was to coordinate the transfer of technical and organizational knowledge from the English and to transform it into Swedish headquarters’ existing routines.

Information and data were collected through three sources: semi-structured interviews, participation in project meetings and internal documentation. It is important to point out that one of the authors of this paper spent every second week in the receiving organization with full access to the project documentation, meetings and team members for questions and clarification. We interviewed all members in the project in order to get perspectives from project managerial side, sub-project managerial side and as well from engineers. This multi-perspective approach is beneficial to the understanding of the relation between project management and AC, given the multidisciplinary

nature of the project, and helped reduce the risk of retrospective and personal interpretation biases, which might undermine the construct validity of the case study research (Yin, 2008).

Semi-structured interviews lasted around one hour and were documented through notes. Other spontaneous informal interviews lasted on average 15 minutes and used to reveal details and small fractions behind relations. After gathering initial understanding from the interviews, the members were contacted once more in order to confirm our interpretation of the information they provided us. Furthermore, by participating in the project meetings, we could gain particular insights about the interpersonal relationships among project members and about coordination mechanisms, which did not emerged in the preliminary interviews but were confirmed in a second round of interviews with interested members. Through the examination of internal documentation, e.g., minutes of meetings, exchanged e-mails, manuals, we managed to triangulate information so to avoid post hoc rationalization and to ensure construct validity (Yin, 2008).

4. Results and discussion

The empirical evidence that we gathered shows that a pure project organization in the form of a task force separated from the rest of the organization enhances the project team's ability to absorb knowledge. This emerges when comparing the project team's proficiency in the initial phases of the knowledge transfer project and in later phases. At the beginning, the project was organized as a matrix structure. We observed that the level of knowledge absorption was poor since members tended to fall back to their routine activities and dedicated little time to the project tasks. Later, it was decided to move to a pure project organization with task force members dedicated 100 % to the knowledge transfer project. According to managers interviewed, AC was improved since team members could fully concentrate on the task and could better coordinate among each other. Stronger interaction between staff with heterogeneous background fostered the incorporation of different competencies: electrical and mechanical engineers were pushed to cooperate in the common understanding of the functioning of different auxiliary systems of the turbines, instead of approaching the system individually. This empirical result can be explained considering the complex and cognitive nature of AC. Knowledge transfer is a one-off activity, which may be felt as overwhelming by team members, whose natural reaction is to prioritize known and routine tasks. A pure project organization can contrast such behavior. Moreover, other benefits from this dedicated organizational structure include more effective coordination and exploitation of each other's competencies (Henderson, Cockburn, 1994), which is particularly important in the light of the cross-disciplinary nature of AC. Indeed, (Van Den Bosch et al., 1999) find that mixing different competencies in the project is positive for AC. In the light of empirical findings, which only refer to the recognition and assimilation phases of AC, we posit the following proposition:

P1: Pure organization of the project team improves potential AC.

The empirical study suggests that establishing a steering committee for directing the knowledge transfer project is particular beneficial for potential AC. At the beginning of the project, it was unclear what should have been transferred between the sender and the receiver. The two parties involved in the project had different opinions about this, as well as different motivations and objectives. An imperfect alignment between sender and receiver hampered the transfer of knowledge. A steering committee was thus created, including representatives from the two parties, with the aim to achieve a single approach to the project and a shared direction. These findings descend from the collaborative nature of knowledge transfer projects, whereby people from distinct entities/firms work together to share knowledge. An organizational mechanism such as steering body is important to deal with contradictory views about the management and execution of knowledge transfer project, which may end up in disputes and conflicts that hinder the absorption of new knowledge. This is consistent with the work by (Lane, Lubatkin, 1998), who show that by reducing differences and deviations between parties a single overarching organizational body enhances inter-organizational learning. Furthermore, the interaction between sender and receiver is more pronounced in the initial phases of the project, when the knowledge held by the sender has to be identified, transferred and assimilated by the recipient. In the subsequent transformation and exploitation phase, the recipient acts in a more independent way with the goal to implement the newly in sourced knowledge into the internal existing processes and routines. As a consequence, the role of the steering committee as a mechanism to ensure unity of intents is less critical. Our empirical observation leads us to posit the following proposition:

P2: The establishment of a steering committee in knowledge transfer projects has a more positive influence on potential AC than on realized AC.

The empirical analysis indicates that planning of the knowledge transfer project differently affect the two dimensions of AC, potential and realized. At first, the planning of the project was done in a way that reflected the product structure of other turbines at the recipient organization. Following this criterion, a work breakdown structure of the project was developed with work packages corresponding to the different components of the turbine. It was soon realized that this planning approach hindered the team members' ability to explore and investigate the sender's knowledge that was not documented or codified. First, the turbines whose technical knowledge was to be transferred had a different structure than the ones being designed in Sweden. Second, the planned activities of the project regarded explicit knowledge, drawings and documents held by the sender but completely missed to capture the tacit part of the knowledge at the recipient, i.e., "how" engineers in England were able to design and manufacture that particular type of turbine. In the light of these difficulties, the project management decided to relax the plan and gave more freedom to the team members in terms of what activities to perform, what tests to run, how to interact with the English engineers. One team member recalls that he stopped spending time searching for documents about the design of the lube oil system and started to question his peer in English subsidiary about the procedure he personally used to engineer the lube oil system. As a consequence, the proficiency of knowledge assimilation increased. On the other hand, once the critical knowledge was transferred from the sender, accurate planning helped the project team to efficiently adapt the acquired knowledge to the routines and the structures existing at the recipient. Planning made easier for the team members, and for the project manager alike, to arrange the activities needed to exploit the knowledge in the right sequence and in the right timing.

This dissimilar impact of planning on the two dimensions of AC can be explained with the different nature of potential and realized AC. Potential AC has an exploratory nature stemming from the fact that it is difficult to know in advance which knowledge is important to transfer and who possess that, whereas realized AC is about being efficient in capitalizing new knowledge and making sure it provides commercial benefits to the firm. Therefore, formalized and structured planning may act as a constraint to the development of potential AC, possibly paralyzing the team and hindering improvisation and creativity. When it comes to exploitation instead, systematic planning creates the optimal path that the team can follow to achieve the project goal in the most efficient way. This path can be confidently planned in advance given the lower level of uncertainty characterizing activities in realized AC. efficiency of knowledge exploitation. Indeed, according to (Charles Galunic and Rodan, 1998), creating excessive rules and procedures in the project work impede knowledge acquisition and assimilation while a structured and formalized environment improves knowledge transformation and exploitation. We thus posit the following propositions:

P3: Planning of the project impede potential AC.

P4: Planning of the project facilitate realized AC.

The empirical evidence that we gathered reveals that granting decision making power to team members has positive effects on potential AC. Delegating operational decisions to sub-project managers, e.g. electrical sub-project manager had full authority to decide the approach to understand the function of motor control center auxiliary system, either through drawings and documents or by spending time in assembling workshop watching the assembly of the system, pushed them to freely exert their creativity and to use their skills to find proficient solutions to identify and assimilate needed knowledge at the sender's. The project manager in charge of the overall project acknowledges that involving subordinates in the decision making process was important to leverage their heterogeneous expertise, which helped him understanding the overall scope of the new knowledge to be absorbed. This result can be interpreted in the light of the Decentralization of Incentives Theory (Geanakoplos, Milgrom, 1991), according to which, in a context of high uncertainty and unpredictability as it is for potential AC in knowledge transfer projects, delegation of responsibilities allows a better decision making because local experts, i.e. sub-projects managers, enjoy a larger information advantage vis-à-vis top managers. Participation in decision making means not only an increase of quantity and quality of ideas and proposals but also that those ideas and proposals are implemented and pursued (Sheremata, 2000). Therefore we posit following proposition.

In contrast, we find that delegation has negative impact on realized AC. Our empirical

analysis suggests that in the exploitation phase, a plethora of decision makers following their opinions about the best way to transform and use externally acquired knowledge may be sub-optimal in terms of time and resource consumption. As the project manager pointed out, the key performance objective in realized AC is efficiency, which is more easily achieved by sticking to a top-down devised plan than by consuming time to reach consensus. This result descends from the executive nature of realized AC. Developing a consistent way of working during implementation creates a predictable working environment for team members. According to (Atuahene-Gima, 2003), delegation necessitates consensus on the decision taken, which may have a negative effect on the efficiency of knowledge transformation and exploitation. We thus posit the following propositions:

P5: Team members' participation in decision making enhances potential AC.

P6: Team members' participation in decision making hinders realized AC.

5. Conclusion

This paper represents a first exploratory attempt to bridge the gap between the increasingly relevant topic of absorptive capacity and the field of operations management. It provides an interpretative conceptual framework that sheds new light on absorptive capacity at the project level, and a set of research propositions that represent a promising starting point for future confirmatory research.

Our findings show that a set of project management and organization practices, like pure project organization, steering committees, planning and delegation are key antecedents to the development of absorptive capacity. According to the empirical evidence gathered, different project management tools affect the two dimensions of absorptive capacity varyingly. These results point to the extremely different nature of potential AC vis-à-vis realized AC, and the consequent need for different managerial systems. From this point of view, AC may resemble the multidimensional concept of ambidexterity, which is achieved by balancing exploration and exploitation. Consistent with (Tushman and O'reilly Iii, 1996) structural view of ambidexterity, we argue that dual structures and management, one focusing on recognition and assimilation and the other focusing on transformation and exploitation, may be beneficial for the development of overall AC. A natural question arising from this study is whether the potential and realized dimensions should be part of the same overarching concept of AC.

As regards managerial implications, this paper provides managers with a number of recommendations to improve the absorption of new technological knowledge from external units. These suggestions should be better conceived by managers as input to identify the solutions that are more appropriate to the needs of their companies, rather than best practices or blueprints for success. In particular, our study shows that one-size-fits-all approach to the knowledge transfer project management should be avoided.

The study has obvious limitations. Because of single case study, results cannot be generalized. Future research should be aimed at enriching the conceptual framework that is put forward here through the analysis of other representative projects in different contexts and at validating the relationships encompassed through large-scale empirical analyses.

References

Ahuja, Katila, 2001 – *Ahuj, Katila* (2001). Technological acquisitions and the innovation performance of acquiring firms: A longitudinal study. *Strategic Management Journal,* 22, 197.

Ahuja, Lampert, 2001 – *Ahuja, Lampert* (2001). Entrepreneurship in the large corporation: A longitudinal study of how established firms create breakthrough inventions. *Strategic Management Journal,* 22, 521–543.

Argote, 1999 – *Argote* (1999). Organizational learning creating, retaining, and transferring knowledge, Springer Science, New York.

Argote et al., 2003 – *Argote, Mcevily, Reagans* (2003). Managing knowledge in organizations: An integrative framework and review of emerging themes. *Management Science,* 49, 571–582.

Atuahene-Gima, 2003 – *Atuahene-Gima* (2003). The effects of centrifugal and centripetal forces on product development speed and quality: How does problem solving matter? *Academy of Management Journal*, 46, 359–373.

Charles Galunic, Rodan, 1998 – *Charles Galunic, Rodan* (1998). Resource recombinations in the firm: Knowledge structures and the potential for Schumpeterian. *Strategic Management Journal*, 19, 1193.

Cohen, Levinthal, 1990 – *Cohen, Levinthal* (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35, 128–152.

Easterby-Smith et al., 2008 – *Easterby-Smith, Lyles, Tsang* (2008). Inter-organizational knowledge transfer: Current themes and future prospects. *Journal of Management Studies,* 45, 677–690.

Floyd, Lane, 2000 – *Floyd, Lane* (2000). Strategizing throughout the organization: Managing role conflict in strategic renewal. *Academy of Management Review,* 25, 154–177.

Galbraith, 1990 – *Galbraith* (1990). Transferring core manufacturing technologies in high-technology firms. *California Management Review*, 32, 56–70.

Geanakoplos, Milgrom, 1991 – *Geanakoplos, Milgrom* (1991). A theory of hierarchies based on limited managerial attention. *Journal of the Japanese and International Economies,* 5, 205–225.

Gupta, Govindarajan, 2000 – *Gupta, Govindarajan* (2000). Knowledge flows within multinational corporations. *Strategic Management Journal,* 21, 473.

Helfat, 1997 – *Helfat* (1997). Know-how and asset complementarity and dynamic capability accumulation: The case of r&d", *Strategic Management Journal,* 18, 339–360.

Henderson & Cockburn (1994), "Measuring competence? Exploring firm effects in pharmaceutical research", Strategic Management Journal, 15, 63–84.

Huston, Sakkab, 2006 – *Huston, Sakkab* (2006). Connect and develop. (cover story). *Harvard Business Review,* 84, 58–66.

Jansen et al., 2005 – *Jansen, Van Den Bosch, Volberda* (2005). Managing potential and realized absorptive capacity: How do organizational antecedents matter? *Academy of Management Journal*, 48, 999–1015.

Kogut, Zander, 1992 – *Kogut, Zander* (1992). Knowledge of the firm, combinative capabilities, and the replication of technology. *Organization Science,* 3, 383–397.

Köster, 2010 – *Köster* (2010), International project management, SAGE Publications Ltd, London.

Lane, Lubatkin, 1998 – *Lane, Lubatkin* (1998). Relative absorptive capacity and interorganizational learning. *Strategic Management Journal,* 19, 461.

Lane et al., 2001 – *Lane, Salk, Lyles* (2001). Absorptive capacity, learning, and performance in international joint ventures. *Strategic Management Journal,* 22, 1139–1161.

Leonard-Barton, 1990 – *Leonard-Barton* (1990). A dual methodology for case studies: Synergistic use of a longitudinal single site with replicated multiple sites. *Organization Science,* 1, 248–266.

Lewin et al., 2011 – *Lewin, Massini, Carine* (2011). Microfoundations of internal and external absorptive capacity routines. *Organization Science,* 22, 81–98.

Lyles, Salk, 1996 – *Lyles, Salk* (1996). Knowledge acquisition from foreign parents in international joint ventures: An empirical examination in the hungarian context. *Journal of International Business Studies,* 27, 877–903.

Meeus et al., 2001 – *Meeus, Oerlemans, Hage* (2001). Patterns of interactive learning in a high-tech region. Organization Studies (Walter de Gruyter GmbH & Co. KG.), 22, 145.

Meredith, Mantel, 2010 – *Meredith, Mantel* (2010). Project managment mangerial approach. John Wiley Sons, Inc., Hoboken.

Mowery et al., 1996 – *Mowery, Oxley, Silverman* (1996). Strategic alliances and interfirm knowledge transfer. *Strategic Management Journal,* 17, 77–91.

Rao, Drazin, 2002 – *Rao, Drazin* (2002). Overcoming resource constraints on product innovation by recruiting talent from rivals: A study of the mutual fund industry, 1986-94. *Academy of Management Journal*, 45, 491–507.

Sheremata, 2000 – *Sheremata* (2000). Centrifugal and centripetal forces in radical new product development under time pressure. *Academy of Management Review,* 25, 389–408.

Siggelkow, 2007 – *Siggelkow* (2007). Persuasion with case studies. *Academy of Management Journal,* 50, 20–24.

Tsai, 2001 – *Tsai* (2001). Knowledge transfer in intraorganizational networks: Effects of

network position and absorptive capacity on business unit innovation and performance. *Academy of Management Journal*, 44, 996-1004.

Tushman, O'reilly Iii, 1996 – *Tushman, O'reilly Iii* (1996). Ambidextrous organizations: Managing evolutionary and revolutionary change. *California Management Review,* 38, 8–30.

Van Den Bosch et al., 1999 – *Van Den Bosch, Volberda, De Boer* (1999). Coevolution of firm absorptive capacity and knowledge environment: Organizational forms and combinative capabilities. *Organization Science*, 10, 551–568.

Volberda et al., 2010 – *Volberda, Foss, Lyles* (2010). Absorbing the concept of absorptive capacity: How to realize its potential in the organization field. *Organization Science,* 21, 931–951.

Yin, 2008 – *Yin* (2008). Case study research design and methods, SAGE publications, Inc., Los Angeles.

Zahra, George, 2002 – Zahra, George (2002). Absorptive capacity: A review, reconceptualization, and extension. *Academy of Management Review,* 27, 185–203.