

ORGANIZATIONAL LEARNING: A REPRISE

Paulo Cunha

Tilburg University

Postbus 90153, 5000 LE Tilburg, The Netherlands

Phone: +31 13 466 21 54; Fax + 31 13 466 20 67; E-mail: p.cunha@kub.nl

John Rijsman

Tilburg University

Postbus 90153, 5000 LE Tilburg, The Netherlands

Phone: +31 13 466 24 67; Fax +31 13 466 20 67; E-mail: j.b.rijsman@kub.nl

Theo Verhallen

Tilburg University

Postbus 90153, 5000 LE Tilburg, The Netherlands

Phone: +31 13 466 24 20; Fax + 31 13 466 22 52; E-mail: theo.m.m.verhallen@kub.nl

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ABSTRACT

Organizational Learning has been increasingly conceptualized as a meta-capability central to the dynamic regulation of a firm's portfolio of resources and capabilities. As a consequence, organizational learning has emerged as a nuclear concept within the multiple disciplinary domains and theoretical perspectives focused on the investigation of the determinants of competitive advantage. Paradoxically, in contrast to its pervasiveness as a theoretical reference and explanatory concept within extant research in the fields of organization theory and strategic management, the substantive nature of the organizational learning phenomenon remains largely unexamined. In particular, organizational learning has been approached in most of the empirical literature as a 'black box' that, notwithstanding its significant explanatory power, remains little understood in terms of its constituent processes, its focal contents and its primary agents. The present paper confronts this opportunity by proposing a re-examination of extant conceptualizations and research on organizational learning and by articulating a framework and an associated research agenda for future research.

Keywords: organizational learning, competitive advantage

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How organizational learning is conceptualized has been and remains central to the development of the field. Dominant conceptualizations of what constitutes organizational learning have, over time, shaped the field's evolution by defining its focus and disciplinary boundaries, and legitimizing the relevance of research questions and methods of inquiry.

A retrospective analysis of research on organizational learning reveals the presence of a dialectic pattern of evolution in which thesis and antithesis have been sporadically punctuated by attempts to either articulate syntheses of the field (Glynn, Lant, and Milliken, 1994; Miller, 1996) or to foster appreciation of its inherent pluralism (Bell, Whitwell, and Lukas, 2000; Easterby-Smith, 1997). The dialectics of organizational learning research have been crystallized around three central themes (Easterby-Smith, Crossan, and Nicolini, 2000; Fiol and Lyles, 1985; Glynn, Lant, and Milliken, 1994; Miller, 1996; Miner and Mezias, 1996; Shrivastava, 1983): (1) the nature of learning (process vs. outcome); (2) the locus of learning (individual vs. organization); and, (3) the content of learning (cognition vs. behavior).

The Nature of Learning

Extant definitions of organizational learning have consistently combined process and outcome dimensions of learning. More specifically, organizational learning has been pervasively defined as the process by which organizations change a focal learning content, viz. behaviors, cognitions, or both (Fiol and Lyles, 1985). This tendency reflects the fact that 'learning' constitutes an achievement verb and therefore refers to both a process and an outcome (Sandelans and Drazin, 1989; Weick and Westley, 1996). In contrast with conceptual definitions, empirical research on the phenomenon has adopted two distinct approaches: (1) an outcome perspective in which learning is defined in terms of the experience a firm possesses; and (2) a process perspective, focused on investigating the dynamics of specific knowledge processes. The outcome perspective is characteristic of research on learning curves (Yelle, 1979). Research in this domain suggests that as a firm accumulates experience in executing a productive activity its performance

increases. This research has been extended to other domains including acquisitions (Haleblian and Finkelstein, 1999) and internationalization (Zahra, Ireland and Hitt, 2000). The process perspective explores knowledge processes in organizations and the conditions for their effectiveness. This stream of research has focused on three main knowledge processes sourcing, transfer and integration (Eisenhardt and Santos, 2002). Notwithstanding the important contributions associated with both research streams, we are still confronted with a significant absence of empirical research on what constitutes organizational learning, how it operates, what factors influence its occurrence, and through which processes it influences organizational performance (for an exception see Bontis, Crossan and Hurland, forthcoming).

The Locus of Learning

In what pertains to the locus of learning a dialectical tension has existed between the individual and the organizational levels of analysis. Some authors have suggested that individuals constitute the exclusive agents of organizational learning (Simon, 1991). In contrast, other authors have proposed that learning becomes ‘organizational’ when it is institutionalized in organizational practices and structures (Hedberg, 1981; Crossan, Lane and White, 1999). Glynn et al. (1994) and Crossan et al. (1999) have contributed towards a synthesis of these approaches by articulating multi-level frameworks of organizational learning.

The relevance of a multi-level conceptualization of organizational learning is supported by empirical research. At the individual level, research suggests that individuals are important agents of learning in organizations (Crossan, Lane and White, 1999; Nonaka and Takeuchi, 1995; Simon, 1991). Insight, the generation of innovative ideas and intuiting occur at the individual level. At the group level, research has highlighted that groups are important loci of learning. Groups provide relevant contexts for interpretation, codification and dissemination of knowledge (Brown and Duguid; Weick and Roberts). Further research has established a link between team learning and performance (Edmonson, 1999). At the organizational level, research has demonstrated that organizations tend to learn from experience (Simonin, 1997; Yelle, 1979; Zollo

and Winter, 2002) At the inter-organizational level, research on alliances and networks provides support for the existence and importance of learning between organizations (Doz, 1996; Lane and Lubatkin, 1998). Research has also provided evidence for the occurrence of level at the industry level (Baum and Ingram, 1998).

The Content of Learning

Relative to the content dimension of organizational learning, extant research has oscillated across a wide range of dichotomizations: (1) behavior vs. cognition; (2) tacit vs. explicit knowledge; (3) exploration vs. exploitation; (4) single-loop vs. double-loop. The distinction between learning as changes in behaviors or as changes in cognitive structures has remained a central differentiating factor amongst perspectives on organizational learning. Fiol and Lyles (1985) have identified the tension between cognition and behavior as a core characteristic of organizational learning research. Glynn, Lant, and Milliken, 1994 identified two historical traditions in the development of the field: the adaptive learning approach, associated with a behavioral tradition and the knowledge development approach focused on the evolution of cognitive structures. Further dichotomizations have emerged focused on complementary dimensions of organizational learning. Accordingly, the distinction between single-loop and double-loop learning and, more recently, between exploration and exploitation has contributed to a more accurate identification of the distinct levels of learning. The emergence of the knowledge-based view (Grant, 1996) as a dominant topic in organization theory and strategic management has emphasized the centrality of tacit and explicit knowledge as focal contents of organizational learning, and articulated the importance of knowledge-based resources for organizational performance (Eisenhardt and Santos, 2002). Contributions towards a synthesis have been provided by Glynn, Lant, and Milliken, 1994 that have articulated a conceptual framework in which changes in cognitions are closely intertwined with changes in behavior. The reviewed literature converges towards a view of organizational learning as a complex phenomenon focused on multiple contents.

In the present paper we propose the following definition of organizational learning:

Definition. Multi-level processes by which the composition of an organizations' portfolio of knowledge resources and capabilities is changed.

The adopted conceptualization of organizational learning: (1) explicitly recognizes the multi-level nature of the phenomenon; (2) emphasizes the intimate relationship between learning as a process and the outcomes of learning; (3) posits that organizational learning may occur through multiple processes; and (4) specifies the content of organization learning in terms of knowledge resources and capabilities. As a consequence, a distinct set of questions becomes relevant to our understanding of organizational learning: How is the composition of a firm's portfolio of knowledge and capabilities characterized? What are the relationships between changes in the composition of a firm's portfolio of knowledge resources and capabilities and performance? What are the central patterns in the evolution of a firm's portfolio of knowledge resources and capabilities? The following sections articulate, on the basis of existing research, preliminary answers to these questions.

PORTFOLIOS OF KNOWLEDGE RESOURCES AND CAPABILITIES

In the present section we focus on the outcomes of organizational learning processes, viz. the changes in the composition of a firm's portfolio of knowledge resources and capabilities. The characterization of firms as bundles of resources and capabilities is a central feature the resource- and knowledge-based views of the firm (Barney, 1991; Grant, 1996; Penrose, 1959). In the present paper, we conceptualize a firm's portfolio of resources and capabilities as comprising three distinct and interdependent portfolios: (1) a portfolio of tangible resources; (2) a portfolio of knowledge (intangible) resources; and (3) a portfolio of capabilities (Barney, 1991; Teece, Pisano and Schuen, 1997). The knowledge-dominant nature of capabilities and knowledge assets determines that their generation and reconfiguration follow distinct processes than those associated with the evolution of a firm's portfolio of tangible resources. Accordingly, our focus

will be on the learning dynamics underlying the evolution of a firm's portfolio of resources and capabilities over time.

As we are interested in analyzing changes in the composition of a firm's portfolio of knowledge resources and capabilities, we need a set of dimensions along which we can characterize these portfolios. However, extant conceptual and empirical literature has been dominantly focused on the analysis of discrete knowledge resources and capabilities. Knowledge has been characterized as being explicit or tacit (Eisenhardt and Santos, 2002; Nonaka and Takeuchi, 1995). Capabilities have been described on the basis of their centrality (core vs. peripheral), their contribution to organizational learning (dynamic), their value, rareness, inimitability and non-substitutability. However, research is only beginning to articulate a set of relevant criteria for characterizing resources and capabilities at the portfolio level of analysis. Levinthal and March (1993) introduced the concepts of breadth and depth to characterize firms' knowledge inventories. Zahra, Ireland and Hitt (2000) applied these concepts for characterizing the nature of technological learning by new venture firms. Building on this research we adopt these dimensions to characterize the composition of a firm's portfolio of knowledge resources and capabilities. Depth refers to the degree of proficiency that a firm possesses in deploying a focal resource and capability. Depth in a knowledge resource or capability results from the accumulation of experience through exploitation (March, 1991) and codification (Zollo and Winter, 2002). Breadth, which represents the number of discrete knowledge resources and capabilities possessed by a firm, is increased through exploration (March, 1991).

The Link between Composition and Performance

The resource- and knowledge-based perspectives provide conceptual and empirical support for the role of a firm's idiosyncratic portfolio of resources, particularly knowledge-based resources, and capabilities in determining the firm's performance (Barney, 2001; Makadok, 2001). The dynamic capabilities framework suggests that how a firm's portfolio of resources and capabilities evolves over time influences the extent to which the firm is able to sustain its

competitive advantage by being able to adapt to environmental and technological changes and maintain its competitive edge in the face of attempts by competitors to reduce performance differentials through imitation of valuable resources and capabilities (Karim and Mitchell, 2000; Penrose, 1959; Teece, Pisano and Schuen, 1997). This research suggests that the composition and evolution of a firm's portfolio of knowledge and capabilities constitutes a fundamental determinant of the firm's performance and its sustainability over time.

Proposition 1: The composition of a firm's portfolio of knowledge resources and capabilities has a significant influence on the firm's performance and its sustainability over time.

THE PERFORMANCE IMPLICATIONS OF ORGANIZATIONAL LEARNING: FRAMEWORK AND RESEARCH PROPOSITIONS

Extant research within the outcome perspective has investigated the influence of organizational learning on performance (Argote, Beckman and Epple, 1990; Hayward, 2002; Lubatkin, 1997; Yelle, 1979). We propose that organizational learning influences performance through the changes it produces in the composition of a firm's portfolio of knowledge resources and capabilities.

Proposition 2: The effects of organizational learning on performance are mediated by changes in the composition of a firm's portfolio of knowledge resources and capabilities.

We suggest that changes in the depth or breadth of a firm's portfolio of knowledge resources and capabilities can have positive or negative effects on organizational performance. Further, we propose that the direction of effect of a change in the composition of a firm's portfolio of knowledge resources and capabilities on performance is contingent upon (1) the characteristics of the focal knowledge resource or capability; and (2) the degree of environmental turbulence. Figure 1 provides a schematic representation of our conceptual framework.

******* insert figure 1 about here *******

Changes in Breadth

Changes in the breadth of a firm's portfolio of knowledge resources and capabilities are associated with explorative learning processes. The effects of adding (amplification) or deleting (focalization) a knowledge resource or capability to a firm's portfolio of knowledge resources and capabilities on performance are determined by the degree of environmental turbulence and the characteristics of the focal resource or capability, viz. (1) its strategic value; (2) its uniqueness; and (3) its degree of relatedness to the existing resources and capabilities.

Characteristics of the Focal Knowledge Resource or Capability

Strategic Value. A resource or capability has strategic value when it allows the firm to articulate or implement strategies that improve its efficiency or effectiveness (Barney, 1991). The determination of the strategic value of the focal resource or capability is an ecological property, i.e. contingent to a specific time and context. In particular, environmental and technological changes determine that the value of a knowledge resource or capability decreases over time.

Valuable resources are the central determinants of competitive advantage (Barney, 1991). In contrast, possessing resources and capabilities that are not valuable is posited to have a negative effect on a firm's performance as it diverts managerial attention from valuable resources and capabilities. Thus, we propose the following hypotheses:

H1a: Addition of a strategic valuable knowledge resource or capability has a positive impact on firm performance.

H1b: Deletion of a strategic valuable knowledge resource or capability has a negative impact on firm performance.

Uniqueness. Uniqueness refers to the degree to which a resource and capability is (1) rare, (2) imperfectly imitable and (3) imperfectly substitutable (Barney, 1991). As with strategic value, the uniqueness of a given resource or capability is conditional to a specific context and time. Research suggests that the uniqueness of a resource or capability is associated with superior performance and its sustainability over time (Barney, 1991; Dierickx and Cool, 1989; Peteraf,

1993). However, as Eisenhardt and Martin (2000) argue certain dynamic capabilities are characterized by equifinality, i.e. they tend to be similar across firms in terms of their attributes and outcomes. As a consequence, uniqueness is neither a sufficient nor necessary condition for the existence of positive effects on performance derived from possessing a resource or capability. Rather, the relevance of uniqueness for competitive advantage depends upon the strategic value of the resource and capability. We, therefore, propose the following hypotheses:

H2a: For the addition of valuable resources and capabilities, uniqueness has a positive effect on performance.

H2b: For the deletion of valuable resources and capabilities, uniqueness has a negative effect on performance.

Relatedness. Relatedness of knowledge resource or capability refers to the extent to which the resource or capability is connected with a firm's current portfolio of knowledge resources and capabilities. Research suggests that firms possess greater capacity to absorb knowledge resources and capabilities that are closely related to their existing knowledge base (Cohen and Levinthal, 1990). However, research also proposes that over time a narrow focus on a limited set of capabilities may result in competency traps (Levinthal and March, 1993) and hinder the firm's capacity to adapt to environmental transformation (Hannan and Freeman, 1989). Research on acquisitions and diversification provides support for the firm's capacity to amplify its portfolio of knowledge and capabilities into related or complementary domains, whilst suggesting the difficulty of firms to successfully acquire and deploy unrelated resources and capabilities (Cohen and Levinthal, 1990; Harrison, Hitt, Hoskisson and Ireland, 2001; Palich, Cardinal and Miller, 2000). Research on resource combination through acquisitions and alliances has provided evidence suggesting that resource complementarity rather than similarity is relevant for long-term performance (Harrison, Hitt, Hoskisson and Ireland, 2001). This research suggests that although some gains may accrue to the combination of highly similar resources (e.g. economies of scale), higher benefits can be obtained from the synergies and increased

adaptability derived from the combination of complementary resources (Hitt, Harrison, Ireland and Best, 1998). In summary, the reviewed research provides support for the existence positive effects associated with the addition of moderately related (complementary) resources and capabilities. In contrast, the addition of unrelated knowledge and capabilities has unclear effects on performance. In the short term firms tend to be ineffective in acquiring unrelated capabilities, which may have a negative effect on performance. However, in the long term the resources and capabilities may prove central to enable the firm to adapt to discontinuous changes. Adaptation to the new environmental or technological conditions requires the accumulation of a related set of new resources and capabilities in a new area rather than the addition of a single resource and capability. Therefore, we propose that the amplification of a firm's portfolio of knowledge resources and capabilities towards unrelated resources and capabilities is successful only when it is followed by the subsequent addition of resources and capabilities related to this new area. Unrelated amplification may promote long-term adaptability but only when followed by the development of new resources and capabilities related to the new area. Thus, we propose the following hypotheses:

H3a: For the addition of resources and capabilities, relatedness has an inverted-U-shaped relationship with performance.

H3b: For the deletion of resources and capabilities, relatedness has an U-shaped relationship with performance.

Environmental Turbulence

Research suggests that the importance of changing the composition of a firm's portfolio of knowledge resources and capabilities is influenced by the characteristics of the firm's environment. In periods of significant environmental or technological a firm's capacity to amplify its portfolio of knowledge resources and capabilities into increasingly valuable areas of activity becomes extremely important (hypothesis 1a). However, in periods of severe environmental or technological change these areas will tend to be unrelated to the firm's current portfolio of

knowledge resources and capabilities. At the same time, deletion of resources and capabilities that ceased to be valuable is also important (Hypothesis 1b). Thus we propose the following hypotheses:

H4a: In periods of environmental and technological turbulence, when adding resources and capabilities, relatedness has a linear negative relationship with performance.

H4b: In periods of environmental and technological turbulence, when deleting resources and capabilities, relatedness has a linear positive relationship with performance.

Changes in Depth

Changes in the depth of a firm's portfolio of knowledge resources and capabilities reflect the operation of exploitative learning processes. These changes have been documented as a pervasive phenomenon in organizations. Research on learning curves and the positive effects of experience, suggest that, over time, firms tend to develop their knowledge resources and become more proficient in deploying their capabilities. Research suggests that the depth of a knowledge resource or capability is positively affected by the frequency to which it is deployed and to its degree of codification (Zollo and Winter, 2002). In particular, firms tend to become specialized in knowledge resources and capabilities that are frequently deployed and/or are highly codified (convergence). In contrast, knowledge resources and capabilities that are infrequently deployed and non-codified exhibit a tendency towards depreciation (divergence). The effects of changes in the depth of a firm's portfolio of knowledge resources and capabilities on performance are influenced by (1) the characteristics of the knowledge resource or capability and by (2) the degree of environmental turbulence.

Characteristics of the Focal Resource or Capability

To the extent that strategic value and uniqueness are associated with superior performance we propose that:

H5a: Convergence towards valuable resources and capabilities has a positive impact on performance.

H5b: Divergence from valuable resources and capabilities has a negative impact on performance.

H6a: For convergence towards valuable resources and capabilities, uniqueness has a positive effect on performance.

H6b: For divergence from valuable resources and capabilities, uniqueness has a negative effect on performance.

In what pertains to relatedness, the negative effects of adding unrelated knowledge resources and capabilities reflect the lack of experience and knowledge of the firm in deploying them. Therefore we expect that increases in depth attenuate the negative effects of the addition of unrelated resources and capabilities. Moreover, we propose that divergence from an unrelated resource or capability also has a positive influence on performance as it promotes a focus on the resources and capabilities where the firm is more proficient. However, in the long-term an excessive focus on a narrow and integrated portfolio of knowledge resources and capabilities may inhibit the firm's adaptive capacity and generate competency traps (Levinthal and March, 1993). In what pertains to related resources and capabilities convergence is expected to have a positive influence on performance, as suggested by research on learning curves and the effects of organizational experience. We propose the following hypotheses:

H7a: Convergence towards related and unrelated resources and capabilities has a positive effect on performance.

H7b: Divergence from unrelated resources and capabilities has a positive effect on performance.

H7c: Divergence from related resources and capabilities has a negative effect on performance.

Environmental Turbulence

The degree of environmental turbulence affects the relative benefits of specialization. In stable environments performance is associated with expertise in deploying relatively stable sets of resources and capabilities. In this context specialization has a positive effect on performance. In dynamic environments or periods, the firm's capacity to change the composition of its portfolio of knowledge resources and capabilities becomes critical. Successful adaptation derives from the

firm's capacity to unlearn previously relevant resources and capabilities that are losing its value and quickly gain experience in new domains (hypothesis 5a). Moreover, as the firm attempts to adapt to environmental transformations it gains experience in deploying, with increased frequency, its dynamic capabilities. Thus we articulate the following hypotheses:

H8a: In periods of environmental and technological turbulence, when converging towards resources and capabilities, relatedness has a linear negative relationship with performance.

H8b: In periods of environmental and technological turbulence, when diverging from resources and capabilities, relatedness has a linear positive relationship with performance.

PATTERNS IN THE EVOLUTION OF KNOWLEDGE AND CAPABILITIES PORTFOLIOS

In the present section we analyze how the composition of a firm's portfolio of knowledge resources and capabilities tends to evolve over time. A review of the literature suggests the presence of a common set of patterns inherent to the evolution of firm's portfolio of knowledge resources and capabilities. In particular, research suggests that a firm's portfolio of knowledge resources and capabilities tends to (1) decrease in breadth (focalization) and (2) increase in depth (convergence). Further, changes in the breadth of a firm's portfolio of knowledge resources and capabilities tend to (3) be punctuated and (4) occur less frequently.

Tendency towards Focalization

The tendency of a firm's portfolio of knowledge resources and capabilities to become increasingly focalized has been established in previous research. A stream of research suggests that as firms become successful they tend to focus on a narrow set of activities and enact a very limited repertoire of responses (Miller, 1996; Miller and Ming-Jer Chen, 1996). Levinthal and March (1993) suggested that learning dynamics induce firms to become increasingly proficient in a narrowing set of knowledge resources and capabilities.

Tendency towards Convergence

Research on organizational learning suggests that with experience firms tend to become more proficient in the deployment of their knowledge resources and capabilities. Numerous studies have documented this phenomenon in manufacturing (Yelle, 1979), where the increased proficiency derived from experience is transferable across activities and units (Argote, Beckman and Epple, 1990; Udayagiri and Balakrishnan, 1993). Research on internationalization and acquisitions provides further support for the tendency of firm's to increase their proficiency in the deployment of a knowledge resource and capability with experience (Haleblian and Finkelstein, 1999; Zahra, Ireland and Hitt, 2000).

Tendency towards Inertia

Changes in a firm's portfolio of knowledge resources and capabilities tend to be punctuated. In particular, organizational change tends to occur along periods of convergence and reorientation (Lant and Mezias, 1992). In periods of convergence the relevant set of knowledge resources and capabilities is relatively stable and performance is associated with a firm's expertise in exploiting these resources and capabilities. In periods of reorientation it becomes critical for firms to reconfigure its portfolio of knowledge resources and capabilities. The reconfiguration of a firm's portfolio of knowledge resources and capabilities is associated with changes in breadth through exploration. Therefore we propose the following hypotheses:

H9a: In periods convergence depth activity will be higher than breadth activity.

H9b: In periods reorientation breadth activity will be higher than breadth activity.

Research also suggests that, over time, the frequency of changes in the composition of a firm's portfolio of knowledge resources and capabilities decreases, suggesting the presence of inertial tendencies (Hannan and Freeman, 1989). The combination of simplification and inertia hinders a firm's long-term survival by making it difficult to adapt to discontinuous environmental or technological change.

CONCLUSION

The present paper establishes a link between the literature on organizational learning and strategic management, by articulating a framework that analyses how organizational learning affects organizational performance. In particular, our framework proposes that organizational learning influences performance through changes in the composition of firm's portfolio of resources and capabilities. The composition of a firm's portfolio of knowledge resources and capabilities can change in terms of (1) its breadth, either by amplifications or reductions in the number of distinct knowledge resources and capabilities a firm possesses, or (2) its depth by increases or reductions on a firm's expertise in the deployment of a knowledge resource or capability. By identifying the relationship between the composition of a firm's portfolio of knowledge resources and capabilities and performance, the paper provides a framework for testing some of the core propositions associated with the resource- and knowledge- based views of the firm. The proposed framework will be tested in subsequent research.

REFERENCES

References available from the authors.

Figure 1

