Connecting Firm-level Learning with Performance

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Connecting Firm-level Learning with Performance

Abstract

Learning has value for the firm, at least from the shareholder perspective, to the extent that it contributes to improved performance. We explore the antecedents and consequences of firm-level learning which is equated to change in organizational memory, but which may or may not then change behaviour. Learning (exploration) and memory (exploitation) both moderate performance but may act synergistically or competitively. We show that information, learning and memory have three forms (cognitive, affective and experiential). Firm knowledge is the cognitive part of organizational memory. We introduce two drivers of performance (purpose and animal spirits) as well as resource constraints, the omission of which may help explain why organizational learning theory has not been more widely adopted. Finally we review managerial implications, limitations and proposals for the empirical testing of this exploratory model which is intended to help explain how organizational learning can enhance performance.
Connecting Firm-level Learning with Performance

Learning has value for the firm, at least from the shareholder perspective, to the extent that it contributes to improved performance. The connection may be mediated by competitive advantage or greater productive efficiency or knowledge management but little research has been devoted to placing learning in a context of antecedents (drivers) and consequences (knowledge and performance). In this paper we make the connection between learning and performance by developing a conceptual model in which learning and knowledge independently moderate the drivers of performance.

The need and implications of the model are both substantial. The need is illustrated by the conclusions of the guest editors of a recent Special Issue of the *Journal of Management Studies* that focused on organizational learning: “The time is ripe to start addressing learning and knowing in the light of inherent conflicts between shareholders’ goals, economic pressure, institutionalized professional interests and political agendas” (Easterby-Smith, Crossan and Nicolini 2000, p.793). On a practical level, the model will guide managers on issues relating to, for instance, the resources that should be devoted to learning and innovation (exploration) rather than extracting more value from existing knowledge (exploitation).

Learning and knowledge can be seen as reinforcing each other: sharing knowledge and identifying new areas for learning. But exploration and exploitation also compete, which Crossan, Lane and White call “strategic renewal tension”, a conflict which has rarely been considered (1999, p. 522). Existing knowledge can obstruct learning and
new learning can overturn existing knowledge. The conflict outcome is not always the better for performance: sailors continued to believe the earth was flat long after the discovery of curvature could have aided navigation. Levinthal and March provide an explanation: “Learning processes are driven by experience. Exploitation generates clearer, earlier and closer feedback than exploration. It corrects itself sooner and yields more positive returns in the near term” (1993, p.107). In other words, learning is likely to consume more resources (time, energies and money) than relying on existing knowledge: to be net positive learning has to contribute more than it costs and managers are unlikely to know the payback from learning before they embark on it.

One could therefore surmise that the accumulation of knowledge can inhibit learning which may account for the paradox of those firms who trumpet that they are knowledge driven while simultaneously giving early retirement to their most knowledgeable, or at least experienced, managers. Firms know they have to remove obstacles to learning without necessarily a consciousness of what they have to learn.

The idea that a firm is no better than its information may be as old as business itself. We adopt a firm-level perspective in which the organization is treated as a single organism (Spencer, 1873; Hedberg, 1981; De Geus, 1997; Dixon, 1999). In other words, we are using human learning as an analogy for the way a firm learns.

This paper is structured as follows. First, we take the Pawlowsky (2001) framework of organisational learning as a starting point and then identify the key constructs for a model causally linking organizational learning and memory with performance. In
doping so we explore the components of learning, the nature of organisational knowledge and memory, and finally how information, learning and memory interact. We then speculate about what seems to be missing and describe new constructs which appear to be needed to make the connection between learning and performance and complete the model. After reviewing management implications and proposing empirical research, we draw conclusions.

**Components of learning**

Pawlowsky (2001) concurs with Fiol and Lyles’ (1985, p. 803) suggestion that the broad acceptance of organizational learning is not matched by any systematic convergence of the concepts: “no theory or model of organizational learning is widely accepted. Major research (…) along with more modest efforts provide the basis for initial attempts to define, develop, and to differentiate organizational learning and its components. Each has approached the subject from different perspectives, leading to more divergence.”

While Crossan, Lane and White (1999), Dixon (1999) and Easterby-Smith, Crossan and Nicolini (2000) provide valuable frameworks and overview, we selected Pawlowsky’s framework, reproduced as Figure 1, as a starting point as being the most comprehensive and concise single structure. The four overlap to some extent, as might be expected, for example in distinguishing the individual, group and organizational levels and in learning-process. Nevertheless, Pawlowsky provides, for our purposes, the appropriate
context to show those elements of organizational learning we will use (system-level and learning-models). We do not use learning-types in this development but our model presents a contrasting view of learning process – see Figure 1 (his Figure 3.2, p.79).

**Figure 1: Pawlowsky’s Conceptual Framework for Organizational Learning***

<table>
<thead>
<tr>
<th>System-levels</th>
<th>Learning-process</th>
<th>Learning-modes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>Identification/creation</td>
<td>Cognitive learning</td>
</tr>
<tr>
<td>Group</td>
<td>Diffusion</td>
<td>Cultural learning</td>
</tr>
<tr>
<td>Organization</td>
<td>Integration/modification</td>
<td>Action learning</td>
</tr>
<tr>
<td>Interorganizational</td>
<td>Action</td>
<td></td>
</tr>
</tbody>
</table>

As noted above, taking the firm as our unit of analysis does not deny the interactivity between system levels (Cook and Yanow, 1993). The different learning modes, however, are important for this model and we adopt the same three. Pawlowsky notes McGuire: “Throughout the classical tradition, from Plato and Aristoteles on, theorists repeatedly proposed the same three components of attitude under their latinized names of cognitive, affective and conative.” (1968, p.155). The extent to which “cultural” is the appropriate term for the firm-level counterpart of affective is discussed later. We treat conative as the same as experience- or action-based learning.
The literature has tended to focus on the first and third learning-modes, as shown by Table 1, and only Huy (1999) uses all three.

Table 1. Firm-level Learning-modes

<table>
<thead>
<tr>
<th>Source</th>
<th>Cognitive</th>
<th>Affective</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daft and Weick, 1984</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Senge, 1990</td>
<td>X *)</td>
<td>X *)</td>
<td></td>
</tr>
<tr>
<td>Huber, 1991</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Weick and Roberts, 1993</td>
<td></td>
<td>X *)</td>
<td>X *)</td>
</tr>
<tr>
<td>Nonaka, 1994</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crossan, Lane, White, 1999</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Leroy and Ramanantsoa, 1997</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Huy, 1999</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

*) at the group level

To avoid circularity we need to distinguish learning from whatever is revealed by behaviour. Friedlander expresses it thus:

“Change resulting from learning need not be visibly behavioral. Learning may result in new and significant insights and awareness that dictate no behavioral change. In this sense the crucial element in learning is that the organism be consciously aware of differences and alternatives and have consciously chosen one of these alternatives. The choice may be not to reconstruct behavior but, rather, to change one’s cognitive maps or understandings.” (1983, p.194) (cf. Huber, 1991)
Cognition informs the presence or absence of things, whereas affect is judgemental, i.e. whether the things are good or bad, benign or threat (Weiss, 2000). These values influence the extent to which the individual will engage the thinking process, the confidence in performing the task and the receptivity to change.

It might be helpful to note at this stage the recent biological findings “in both rats and humans, that recall of new facts is enhanced by the presence of certain degrees of emotion during learning” (Damasio, 1999, p. 294). In so far as biological minds parallel the corporate, it would be reasonable to assume the same phenomenon: affect will moderate the cognitive learning-model. Possibly the reverse is also true although that is less clear.

Huy (1999) expands the notion of emotional intelligence to the organizational level and proposes that an emotionally mature organization will be more receptive toward change, and will display higher level of learning. This may be wishful thinking. Other commentators, noted above, imply that greater learning arises before maturity, emotional or otherwise, sets in. Parents of teen-agers may well agree. Whatever the reality, and it may be context-driven, we prefer to see cognitive and affective learning as being independent but interactive.

Thus, the affective learning-model evaluates information judgementally (Weiss, 2000) and moderates receptivity toward change (Huy, 1999) whether in terms of particular behaviours (single loop learning) or of the underlying assumptions (double loop learning).
The third learning-model sees prior behaviour as prescribing future behaviour. Organizations learn by trial and error (Cyert and March, 1963; Revans, 1980; Lant and Mezias, 1990) just as individuals do. The action-learning model also encompasses problem-solving and problem-orientated approaches to organizational learning (Argyris and Schön, 1978; Kolb, 1976; Miller and Chen, 1994) since it is the desired outcome that defines behaviour change.

Less securely innovation, with its experimental implications, is also seen as experiential (Burns and Stalker, 1961; Brown and Duguid, 1991; Hurley and Hult, 1998). Behaviour change may only be potentially better (Hurley and Hult, 1998; March and Olsen, 1987; Huber, 1991) and not improve effectiveness or performance at all (Cook and Yanow, 1993; Friedlander, 1983).

Learning may not change behaviour but, by definition, it does change organizational memory as we now discuss.

**Organizational knowledge and memory**

Organizational learning has long been equated with the gain in knowledge (Daft and Weick, 1984; Huber, 1991; Nonaka, 1994; Slater and Narver, 1995; Dixon, 1999; Fiol, 1994). Thus learning (the change) is the derivative of knowledge. On this basis, while the processes are different, forgetting and unlearning (Hedberg, 1981) are subsumed under the broad umbrella of learning. Nor is learning separated from reinforcement, or
re-learning. Knowledge includes both the store of information (know-what) and of successful business process (know-how).

On the other hand, as the word “knowledge” strictly means cognition, we need a wider term (memory) to include the cumulative gain from affective, or cultural, and experience-based learning. For our purposes, memory is a state of organizational mind; it cannot change without learning.

Olivera (2000) extended the Walsh and Ungson (1991) definition of organizational memory to include databases and social networks. Human memory (Rose, 1993) combines cognition, affective and experiential (action-based) components. Declarative memory deals with what we know and with meaning. Reflexive memory is built from experience, either our own or that of our forebears. We include all these elements but, as shown by Spender (1996a), the appropriate language to describe non-cognitive organizational memory is not defined, although Argote (1999) suggests that organizational memory is the repository of knowledge gained through experience. She then goes on to include other forms of non-cognitive “knowledge” within memory. We think her usage of “knowledge” and “memory” is slightly loose for our purposes especially as it slips from the individual to the firm level.

Similarly tacit knowledge is not strictly “knowledge” since it is not [consciously] known. In so far as it arises experientially then, as in the case of the ballet dancer metaphor used by Spender, “kinetic knowledge” (p. 67) is part of [reflexive] memory in the scheme used here.
Thus organizational memory is here portrayed as the accumulation of all previous learning, cognitive (knowledge), affective and experiential. It is a key corporate asset and is both tacit and explicit. Of course, across time knowledge is dynamic, as suggested by Spender (1996b), but we avoid that usage since we treat changes in knowledge as learning.

The three learning-modes requires a matching three memory-modes but an issue remains whether Pawlowsky (2001) is entitled to use “culture” for the second, affective, form. Agreement of definitions of the term have been illusive. The anthropologists Kroeber and Kluckhohn (1952) noted 164 definitions of the term in their review of the literature half a century ago. With this heritage it seems the use of definitions of corporate culture is a matter of preference.

A large part of non-cognitive memory consists of culture and its related concepts. Schein (1984, 1991, 1992) distinguishes culture from climate. Both are part of the collective unconscious. Day (1999) separates capabilities from culture. Schein (e.g. 1992) and Day (1999), however, see culture as having more than one level: the visible artefacts (i.e. climate), values and beliefs and finally the shared assumptions. Dixon defines organizational culture as “the set of collective meaning structures that organizational members use to interpret the nature of their world and themselves in relation to it.” (1999, p.199) Thus, for her, it is part of semantic memory but also part of the judgmental values which moderate cognitive learning. Schein, in a brief
retrospective, suggests that researchers still “underestimate the importance of culture - shared norms, values, and assumptions - in how organizations function.” (1996, p. 229)

Culture therefore overlaps both affective and experiential organizational memory and also semantic and reflexive memory. Taken together with climate and capabilities, they complement knowledge but they do not map neatly onto the other memory components. For our purpose, we therefore retain the original three forms: cognitive, affective and experiential.

*The interaction of information, learning and memory*

Figure 2 shows the feedback effects of learning on information and memory on both learning and information. For symmetry, information, learning and memory take all three forms. Thus information may be tacit, e.g. experience gained by practice. What we want to learn, and what we know, affects perception and strategic renewal tension affects learning.

![Figure 2: Firm-level Learning Interaction](image)

Note that learning and memory do not affect the information that presents itself; they moderate the passive perception of it. On the other hand, the state of memory may
influence an active search for particular types of information. Cohen and Levinthal (1990) express this as “absorptive capacity” and suggest that prior knowledge influences a firm’s ability to recognise, assimilate and get results from relevant new information. Figure 2 recognizes both passive and active information acquisition.

Both information and learning draw on resources but this model does yet not show how resources are refreshed. By “resources” we mean organizational consumables of which time and money are the most obvious examples, and perhaps also managerial energy. Contextual factors which are not expended, such as the acceptance of errors or predisposition to innovate, are part of the firm’s culture, or, in the analysis here, affective and experiential memory. Organizational slack, however, is a resource since it can be used up. On the other hand, it may be covered by the availability of time and money.

We suggest that information, learning and memory interact as shown by Figure 2 but they do not satisfactorily explain what drives performance. A switch turns on the lights but the primary activist is the person that trips the switch. Learning and memory enable performance, or moderate it, but they are not the primary cause. In General Electric, the culture may have modified the attributes of Jack Welch as CEO but there must be little doubt that he changed the firm’s culture and performance. Others had been subject to the same organizational memory but they did not create the changes.

This line of argument may be challenged as an infinite regression, e.g. what causes the person to trip the switch etc. We therefore justify our model on the basis that all models
are partial: we determine it to have the antecedents of learning (the drivers) and the consequences of the drivers, learning and memory (performance).

In this model, organizational learning and memory are necessary for improving performance but not sufficient. We now explore corporate purpose and propose animal spirits as the driving force. Purpose gives an organization direction and cohesion but animal spirits are an old concept but perhaps new to the organizational learning literature. Then we consider the role of competition which can also be seen as a driver, but is excluded from our model as it is considered beyond the control of managers in the short to medium term.

**Drivers of performance**

*Purpose*

Sinkula, Baker and Noordewier (1997) identify shared vision, or purpose, as an important driver of learning. It gives focus and provides three organizational keys to learning: commitment to learning, open-mindedness, and shared vision (Day, 1991, 1994; Senge, 1990, 1992; Tobin, 1993). This perspective overlaps with culture as briefly reviewed above and this raises the question of whether it is a different construct or another view of the same one.
Purpose is defined by Collins and Porras as “the organization’s fundamental reasons for existence beyond just making money – a perpetual guiding star on the horizon; not to be confused with specific goals or business strategies.” (1994, p. 73) They distinguish purpose from core values. We use purpose in this sense and similarly separate it from the core values which are here part of (affective) memory. Purpose provides the ultimate benchmark against which performance is assessed, i.e. performance goals which include shareholder satisfaction (profits and increases in share prices), and other stakeholder satisfaction (growth and social benefits). In particular, profits are legitimate performance measures but, according to this school of thought (e.g. Ghoshal, Bartlett and Moran, 1999), not an end in themselves but a means to achieving corporate purpose. Thus purpose determines performance goals which in turn defines performance as results from behaviour relative to those goals.

The UK retailer Marks and Spencer was long considered a model company until a rapid decline in sales revealed weaknesses not so much in profits, although they then also declined, as in the goals top management had set. The problem lay in the gap between purpose and goals, which ignored the customer, rather than the achievement of short term profitability.

Animal spirits

Triandis (1994) notes that the cognitive aspect of learning should not overshadow the affective. Gaps are commonly found between what firms know and how they behave (Pfeffer and Sutton, 1999). Weick and Roberts (1993) agree with Triandis that the goal
of organizational learning is to shape the organization’s collective spirit: to be willing to construct their actions and interrelate it within the organization.

The implication is that some construct which exists outside learning and memory, and which drives learning and seeks to meet the goals (purpose).

Our proposed solution “animal spirits” is, so far as we know, new to the organizational learning literature. Keynes saw animal spirits as the "spontaneous urge to action rather than inaction, and not as the outcome of a weighted average of quantitative benefits multiplied by quantitative probabilities." (1936, p.161). He adopted the term from Descartes (Matthews, 1991). Descartes had positioned cognition as the driving force in human endeavour, leading to The Age of Enlightenment, with animal spirits being a genetic drag on progress. Keynes, however, flipped the polarity and positioned animal spirits as the driver of progress, or at least wealth, despite reasoned analysis.

Another source is the view of the organization not just being an assembly of people but a living entity in its own right. De Geus (1997) drew on Stern’s (1919) “ladder of life” in which the individual was only part way up the ladder with living subsystems below and organizations above. De Geus proposed the living company concept in his analysis of why some thrive and others die. He concluded that only living beings learn and therefore the life force is a necessary component for organizational learning.

These ideas are consistent with the widespread use in the organizational learning literature of the human analogy for learning, knowledge and memory, referenced earlier.
The implications of this life force, or animal spirits, can be seen in various corporate characteristics: energy, vitality, power, motivation, and the determination to act.

Animal spirits may overlap with some views of corporate culture but this paper has abandoned culture as a construct. The distinction between animal spirits and memory is more clear-cut. Memory is a consequence of learning. In a sense it is nurture whereas animal spirits are nature. Woodworth (1958), for example, argues that an individual is always in a state of interaction with the environment.

*Competition*

The competitive environment may legitimately be seen as a driver of performance: a firm will only continue to exist if it competes successfully. We see that, however, as a driver of animal spirits. To the extent than Marks and Spencer, in the earlier example, saw itself as unique, and thus not subject to competition, animal spirits waned.

Accordingly, we see the role of the competitive environment as being mediated by animal spirits and not directly an antecedent of learning.

Its other claim for inclusion in the model is that it obviously impacts performance. Nevertheless, since the ability of management to influence the firm’s competitive environment is limited, we have elected not to include it explicitly within the model.
**Antecedents and consequences of organizational learning**

Figure 3 now builds on Figure 2 to provide the model as a whole.

![Diagram of Antecedents and Consequences of Organizational Learning](image)

The previous sections discussed the individual constructs and we now seek to justify the relationships between them.

Purpose provides goals and a sense of relevance for learning. We see animal spirits as the active driver of learning but purpose gives direction for both passive and active forms of information gathering. We conjecture that animal spirits are independent of purpose but purpose is needed, via learning, to focus them to enhance performance. If the loose cannons can be coordinated, results will improve.
As noted above, the firm is guided in distinguishing necessary from excessive information by the firm’s “absorptive capacity” (Cohen and Levinthal, 1990) which is here included in organizational memory but what has been learned cannot provide a full explanation. Corporate purpose, or the shared sense of it, gives the guiding light. Organizational memory, however, will provide the levels of tolerance for information redundancy. In other words, culture will dictate the extent to which managers feel themselves allowed to forage freely.

In this model, we have not shown a relationship between purpose and animal spirits. That is debatable and empirical research may indicate otherwise, sometimes if not always. One can conjecture that some corporate purposes will be more motivational than others. Conversely, firms with high levels of animal spirits may ensure that there is clear purpose as well as its motivating contribution.

Whichever way that issue comes out, we see performance as being driven by animal spirits moderated by learning (including innovation and exploration) and by memory (exploitation). Learning is also energised by animal spirits. As discussed above, strategic renewal tension (Crossan, Lane and White, 1999) exists which inhibits learning.

Performance may be reduced by the resources needed for information and learning, i.e. they are a negative driver of performance but a positive driver of learning. At the same time, performance directly supplies fresh information and learning in the classic feedback loop proposed in industrial dynamics (Forrester, 1965).
The relationship between goals and performance is shown by a double arrow to indicate both that performance is relative to goals and that future goals are modified by performance. Thus in this model, performance is subjective. If the goals are modest or, as for Marks and Spencer ill-judged, then high levels of subjective performance may coincide with low objective performance, e.g. as judged by analysts or competitors. Any closed system will be subject to the same criticism. The role of management in ensuring openness to the competitive environment is recognised but it is not the subject of this paper.

This model excludes the explicit use of the word “strategy” although some strategic elements are covered by purpose and goals. In Stacey’s (2000) integration of organisational learning, knowledge and strategy, he is driven to the conclusion that strategy is emergent, i.e. it only becomes apparent with hindsight. While we do not strictly need to justify the exclusion of constructs from a model, which is always a specific set chosen to provide partial understanding, strategy would be a strong candidate if it were a driver of learning, beyond purpose. We share the Stacey view that it is more typically a consequence of learning and performance and would not add greatly to the model. That, however, should be tested quantitatively when the model is tested.

After considering the managerial implications of this theoretical model, we consider how it could be empirically tested along with limitations and other areas for future research.
Managerial implications

Figure 3 provides a framework which managers can use to review the balance within and between the internal factors influencing performance. For example:

- **Purpose:** What are the levels of clarity, consensus and commitment?

- **Animal spirits:** How high are energy levels as exemplified by initiatives and determination? How can motivation be increased?

- **Information, learning and memory:** Given the required [changes in] performance, are the three learning-modes (cognition, affect and experience) correctly balance and aligned with information and memory? A company needing to emphasise cognitive learning could appoint a Chief Knowledge Officer as the 20 companies studied by Earl and Scott (1999) each did. Conversely, if the emphasis needs to be on action and exploration, experimentation should be promoted over analysis and formal internal communications. Or perhaps the culture (i.e. affective memory in this model) needs to be changed not just to welcome change but judge what change will be effective.

- **Resources:** Similarly, promoting learning over memory requires adequate resources to be provided. 3M famously asked managers to set 15 percent of their time aside to think and experiment out of the box of current strategy.
The significance of the model, however, lies more in the total agenda it provides for strategic resource review than in any of its parts. A radical strategy is unlikely to succeed unless the necessary changes are made across this framework.

Firstly, it highlights the context in which learning is taking place. In particular, learning is likely to be better disseminated and applied if it is linked to the organizational purpose. Secondly, the model explains why greater attention to learning, through knowledge management programs for example, may not lead to improved business performance if organization lacks a shared sense of purpose or the requirement for affective or experiential learning exceeds that of cognitive. Thirdly, our model highlights the need to address and manage the process as a whole rather than concentrating a few constructs.

Ideally, managers may wish to measure the constructs both in order to track how balance is maintained against plan and to understand their relationship with performance more precisely. This is a considerable challenge as we now discuss.

**Limitations and future research**

The increasing attention given to conceptual advances in organization learning over the past decade has not been matched by developments in measurement and empirical testing. This is perhaps due in part to the variety of perspectives, definitions and constructs some of which have been discussed earlier in this paper. Some concepts,
such as purpose, may be intrinsically immeasurable and proxies, such as asking managers to scale their commitment to perceived corporate purpose, may not be satisfactory. At the same time, we must acknowledge the main limitation with the model at this stage is the lack of empirical support.

Furthermore, the selection of constructs is arbitrary to some extent. Competition and the environment were excluded on the grounds that we were considering internal factors and the external factors would be mediated by information gathering. We were concerned with constructs that managers could control. We also considered the organizational learning frameworks such as that of Pawlowsky (2001). Nevertheless, crucial issues may have been omitted.

Before using quantitative methods, this framework and its managerial implications should be tested with managers. Their own models of how organizational learning impacts performance could be made more explicit and compared. From this base, means to measure these constructs could be explored with the respondents. While it is unlikely that one model will fit all companies, it is realistic to seek a generic model which fits more situations than any other model.

This initial phase would explore the goodness of fit, or face validity, of the model, with managers’ models and with observations of the actual processes involved. Importantly, it will also help refine construct definitions and measures and, where possible, align them with those that managers could use in the usual conduct of their business.
From this process, a set of variables should emerge which could be compared with those in the literature, e.g. Argote (1999), DiBella and Nevis (1998), and the self-report variables used by Day (1999). We expect, but would need to verify, that self-reports give reliable results but independent, e.g. audited financial, data should be compared with self-reports, where possible.

New constructs, and animal spirits in particular, will be a greater measurement challenge. The living company, e.g. De Geus (1997), concept has had such wide acceptance, at least to judge by the sales of that book, that we expect managers to be able to rate the vitality of their companies.

Using self-reports, however, produces a logical hindsight problem: managers do not know how useful learning is until after it has impacted performance. Measuring learning today depends on performance tomorrow but if one waits for tomorrow then the results will confound the perception of yesterday’s learning.

Many aspects of business are well managed without being quantified, e.g. strategy and human relations. It may well be that this, or any other, model of how learning impacts performance will have to fall into that category. Alternatively, the attempt to quantify these constructs may be beneficial for management even if it fails through makes choices more explicit. The hindsight problem, however, suggests a third alternative, namely that the model is tested iteratively by going back through the firm’s history. In other words, managers first identify the key transformational stages where performance was substantially improved or damaged. Then the model is used to clarify the
preceding constructs, for example the then current status of strategic renewal tension, the shared purpose, animal spirits and resources being devoted to learning and information. This is not ideal for the manager who wants immediately to predict the future but it would provide a more rigorous method of learning from history.

Finally, the issue of longitudinal vs. cross-sectional research will need to be addressed. While both approaches would be useful, the implicit time lags built into the model (between information, learning and memory, for example) ideally requires longitudinal research to understand the dynamics of the relationships between constructs e.g., feedback loops, multiplier effects. While longitudinal research is often called for in the literature, it is rarely carried out due to time and resource constraints, as well as problems getting access to consistent data.

**Conclusions**

In this paper, firm-level learning means changing organizational memory, which may or may not then be evidenced by changed behaviour. Learning is dynamic whereas memory is the residue of past learning. Memory is inert and cannot “drive” change. Learning (exploration) and memory (exploitation) both moderate performance but, as expressed by strategic renewal tension (Crossan, Lane and White 1999) may act synergistically or competitively.
We began with the Pawlowsky (2001) framework and, in particular, the three learning modes – cognitive, cultural (which we modified back to affective) and experiential. From this we deduced that information and organizational memory must also have these same three forms and therefore knowledge was simply the cognitive part of memory.

Our model introduced two drivers of performance: purpose and animal spirits. The competitive environment undoubtedly influences most if not all these constructs and performance in particular but we have been concerned with internal constructs, i.e. those that managers can directly control.

One reason why the implications from organizational learning research have not been more widely adopted may be the lack of attention given to resource constraints. Managers have neither the time nor the finances to learn as freely and widely as they may wish, quite apart from cultural (organizational memory) constraints. According we built resources explicitly into the model.

Ideally, empirical testing of this model would require the operationalization of a range of new constructs and variables. Before that, however, it could be tested as a whole against how a series of firms now believe performance is affected by organizational learning. One procedure could be to compare a firm’s historical development with key changes in these constructs. At the least, this should enable managers to understand their business from a fresh perspective. Thus we present this model as a step towards managers using organizational learning to enhance performance.
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