

# ORGANISATIONAL LEARNING IN CONSTRUCTION COMPANIES

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**ABSTRACT:** The objective of this paper is to report on the first phase of a PhD study based in the North East of England. In overall terms, the study investigates how knowledge from an existing project might benefit future projects. This would involve a chain of events in which a project team would need a mechanism to embed its knowledge into the company and then the company would need a second mechanism by which to inform new project teams. The investigation is focussed on contracting organisations that engage with the UK performance enhancement initiative known as *Constructing Excellence*. It also summarizes the theoretical perspective on the current state of knowledge about organizational learning and outlines the full methodology to be adopted. Preliminary findings of the first phase of this process are presented. It exposes a snapshot of the North East construction activities. Later sections of the paper outline how the rest of the study is to develop.

**Keywords** – Construction companies, Organisational learning, Project teams, Learning mechanisms.

## 1. INTRODUCTION

The concept of organizational learning continues to gain momentum in both the academic and the business community. From the academic perspective, it has even been claimed that organisational learning as a research domain is now fully established (Easterby-Smith *et al.*, 2000: 783). Understanding the phenomenon of organisational learning is a difficult task owing to its multifaceted nature. A full understanding of the phenomenon demands a multitude of studies and pluralistic approaches. Yet, it is a fashionably interesting and elusive organisational phenomenon attracting interest from almost boundless disciplines (Bapuji & Crossan, 2004; Lipshitz & Popper, 2000; Clegg *et al.*, 1996; Gilley *et al.*, 2001; Starkey *et al.*, 2004; Huber, 1991; Levitt & March, 1988; Easterby-Smith *et al.*, 1999; Argyris & Schön, 1996; Dodgson, 1993; Easterby-Smith & Lyles, 2003). The construction domain is no exception. Nevertheless, organisational learning research within the context of construction has not yet been well represented. The body of literature on organisational learning is still much dominated by scholars from management science, psychology and organisation development, sociology and organisation theory, strategy, production management, cultural anthropology, human resources and marketing (Easterby-Smith, 1997; Argyris & Schön, 1996; Easterby-Smith & Lyles, 2003; Bapuji & Crossan, 2004; Chiva & Alegre, 2005). It is only recently that research has begun to take shape. As evidenced in the literature, a study is developing on Cross Organisational Learning, primarily due to the COLA Project funded by DETR and EPSRC (Cushman & Cornford, 2003; Cushman and Franco, 2004). There has also been some work on Learning Capabilities (Knauseder, 2003; Styhre *et al.*, 2004), Measuring Organisational Learning (Kululanga *et al.*, 2001) and Inter-organisational Learning (Barlow & Jashapara, 1998).

The construction industry, and particularly construction companies, is typified by the fact that its business mainly runs through projects. One of the claims is that construction is inherently different from other industries in that its *factory* moves around and hardly ever develops the same product twice. The principal approach of its management is based on a one-off production philosophy. In fact, the traditional view treats each project as unique (Morris *et al.*, 2000; Bresnen & Marshall, 2001; Dubois & Gadde, 2002). As a consequence, there is frequent evidence that the knowledge or lessons learned from projects is simply lost

following the completion of the project, as the project team is dissolved and members are assigned to a different task, another team, and a new deadline (*cf.* Grabher, 2004: 1492).

The current literature that considers construction companies within the context of learning is divided into two apparently isolated streams: project learning and organisational learning. Project learning theories analyze the potential for learning and knowledge generated from projects (e.g. Prencipe & Tell, 2001; Franco *et al.*, 2004; Kotnour, 2000). The organisational learning branch enriches the generic concept of organisational learning that is already relatively well established and is studied in almost all types of organisation. While many have seen and formulated the potential of projects to function as learning laboratories (Kreutzer, 1995) or arenas for learning processes (Lundin & Midler, 1998), few have provided empirical evidence or conceptual analysis that has highlighted the process of transferring learning across projects or between projects and the wider organisation (Pakendorff, 1995: 330), with some exceptions, including Prencipe & Tell (2001), Williams (2003) and Cushman & Franco (2004).

The purpose of the current research is, therefore, to contribute in addressing these gaps in the literature. It is part of a PhD study based in the North East of England. In overall terms, the study investigates how knowledge from an existing project might benefit future projects. Hypothetically, this would involve a chain of events in which a project team would need a mechanism to embed its knowledge into the company and then the company would need a second mechanism by which to inform new project teams. The investigation is focussed on contracting organisations that engage with the UK performance enhancement initiative known as *Constructing Excellence*. The overall study process takes a multifaceted approach (see the methodology section). In this part of the paper, tentative findings and preliminary results gleaned from work in progress in the first phase of this process are highlighted. This work took the form of a business audit relating to the size and type of projects currently being undertaken and how the project teams are managed. The last part of the paper informs how the remainder of the study will be conducted.

## **2. A BRIEF LITERATURE REVIEW**

### **2.1 Review of the Current State of Knowledge**

Prior organisational learning concepts have emerged primarily from the studies of routine-based organisations (Cyert & March, 1963; Levitt & March, 1988; Hedberg, 1981). From this body of work, the process of learning can be understood as “encoding inferences from history into routines that guide behaviour” (Levitt & March, 1988: 320). Despite an overwhelming body of literature, how the term “organisational learning” should be defined is still controversial. In fact, the definitions of organisational learning are almost as numerous as the theorists working in the field. This predicament can be traced in part to the fact that the ground or setting from which organisational learning is being studied is so diverse. For example, Cangelosi & Dill (1965) observed the phenomenon from their designed simulation in which a small group of students formed what is called “a seven-man team” and acted as managers of a simulated-company-like organisation. Others, such as Argyris & Schön (1978), formulated the concept by examining individual learning within a permanent, stable organisation. Goh (2003) studied the organisational learning processes through case studies of stable organisations. Leonard-Barton (1992) proposed his organisational learning model from a factory setting. Schofield & Wilson (1995) added the role of project-team organisations. Knauseder (2003) tried to view learning from the perspective of project organisations. However, the majority of the body of literature in this domain is based on the

study of typical permanent organisations (see, among others, Denton, 1998; Cyert & March, 1963; Levitt & March, 1988; Schwandt & Marquardt, 2000; Naot *et al.*, 2004).

Notwithstanding the above diversity in studying organisational learning, there are commonly held principles that in order to become a learning organisation, a company should (1) create continuous learning opportunities, (2) promote inquiry and dialogue, (3) encourage collaborative and team learning, (4) establish systems to capture and share learning, (5) empower people toward a collective vision, and (6) connect the organisation to its environment (Watkins & Marsick, 1993; Marsick & Watkins, 1999; 2003).

There are still those who assert that learning is totally related to individuals (e.g. Simon, 1991: 125 and Dodgson, 1993: 377). However, most theorists recognise that organisational learning can exist in its own right and be more than just the sum of individuals' knowledge (Fiol & Lyles, 1985: 804). Others have shown that learning at the organisational level occurs through shared insights and mental models (Argyris & Schön, 1978; Senge, 1990) and builds on the past knowledge and experience of organisation members (Stata, 1996). Over time, the knowledge possessed by an individual may spread to other individuals in the organisation and indeed to other organisations. Knowledge may then be stored in organisational memory (Walsh & Ungson, 1991) in the form of files, manuals, policies, procedures, routines, etc. for retrieval and use. It should not be assumed that organisations behave like individuals. As Hedberg (1981: 3) points out "Organisations do not have brains, but they have cognitive systems and memories... Members come and go, and leadership changes, but organisations' memories preserve certain behaviours, mental maps, norms, and values over time".

This school of organisational theorists agrees that learning can occur through different levels. The learning of individuals is important to organisations, but the link between individual and organisational learning is often *the team*. This relationship was recognized as early as 1965 when Cangelosi & Dill suggested that learning occurs at all three levels - individual, group (team) and organisation. As previously noted, individual learning can only become organisational if that learning is shared among the organisation's members (Argyris & Schön, 1978; Shrivastava, 1983). Thus, some practices of collective learning and sharing meanings (knowledge, beliefs, assumptions) through a form of dialogue, social interaction, formal/informal communication, group dynamic activities, etc. must precede organisational learning.

Current developments in the relation to the need to link individual learning and organisational learning are progressing by looking at the potential of the social, situational and relational aspects of learning. Proponents of this approach include, among others, Lave & Wenger (1991), Wenger *et al.* (1998, 2000, 2002) and Brown & Duguid (1991, 2002). Theorists from this school believe that organisational learning phenomena might be best studied from the social learning perspective rather than the traditional view based on individual cognitive orientation. This emerging perspective advocates the shift in paradigm by seeing organisational learning as a phenomenon of 'learning *by* organisations' rather than mere 'learning *in* organisations' (Lipshitz *et al.*, 2002). As a by-product of this fundamental shift, the argument that organisations have the capacity to learn (DeGeus, 1988; Goh, 2003) now becomes an unquestionably verified metaphor. The growing body of literature on this theme discusses the distinction between organisations that learn and those that do not. The greatest contribution of this cerebral undertaking was perhaps the emergence of learning organisation models with their set of characteristics. Through his book "*The Fifth Discipline: The Art and Practice of the Learning Organization*", Peter Senge (1990) marks the celebration of this academic progression. Various perspectives have also emerged from both empirical studies and theoretical conceptions.

## 2.2 Characteristic of a Learning Organisation

As evidenced in the literature, the growing interest of many theorists has turned towards trying to formulate the features of a learning organisation. Some have taken a stand with a descriptive approach, whilst others tend to provide prescriptive views. In synthesizing the proposals of various theorists, a set of key characteristic elements of a learning organisation can be derived (see Figure 1).

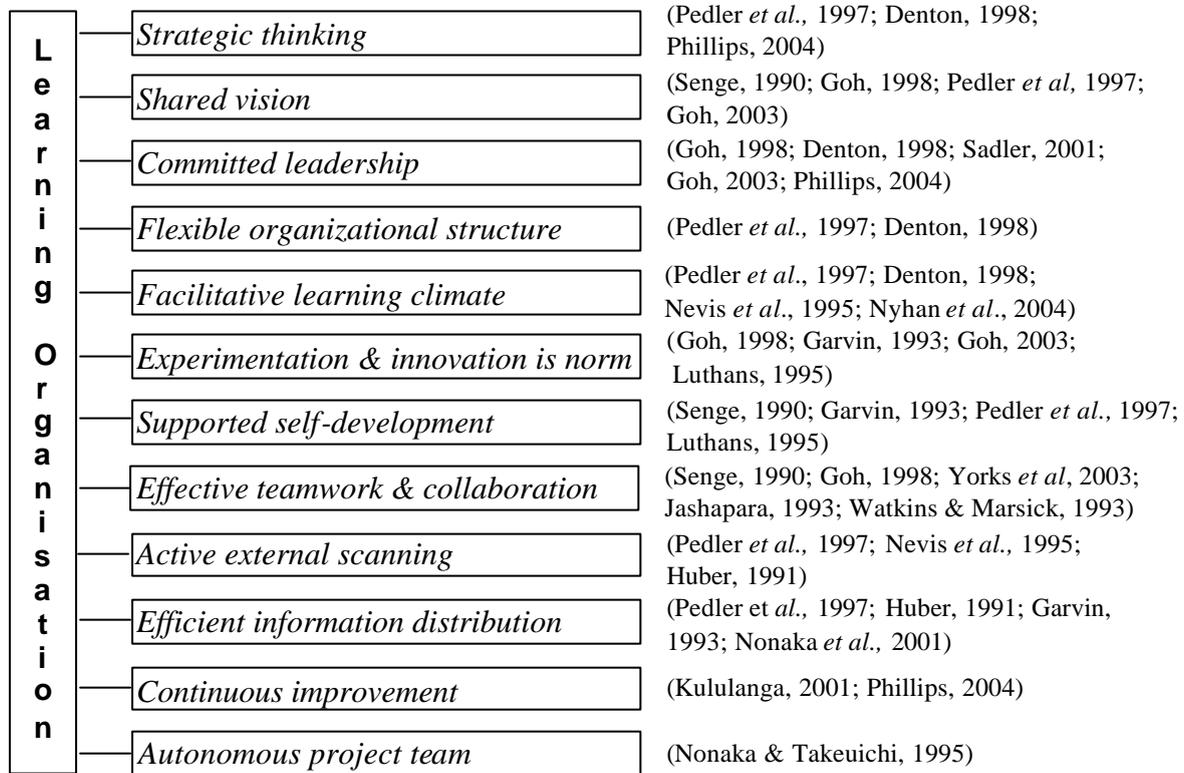


Fig. 1. Key characteristic elements of a learning organisation

Different models also emerge, for example, paying more attention to people (Senge, 1990), strategic approach (Goh, 1998), tools or technology (Garvin, 1993), context development (Pedler *et al.*, 1997) and systemic or holistic approaches (Watkins & Marsick, 1993). Luthans (1995), Nyhan *et al.* (2004) and Phillips (2004) are amongst those who have tried to synthesize these perspectives and Jashapara (1993) and Nevis *et al.* (1995) actually proposed what claimed to be more comprehensive models that emerge from two dissimilar paradigms, namely competitive learning organisations and the learning system paradigms respectively. Broad reviews on this theme are also presented by Örtenblad (2002) and Moilanen (2001).

## 2.3 Measuring Organisational Learning

David Garvin (1993) stresses the need for measurement if learning is to become meaningful. He states: “if you can’t measure it, you can’t manage it” (Garvin, 1993: 89). Similarly, Campbell and Cairns (1994: 10) maintain that any endeavour to bring theory into reality remains difficult without effective measurement tools. Working in this vein, theorists have attempted to develop an instrument to measure the performance of organisations with regard to their attainment against the key elements of the characteristics of learning organisations. These contributors include Pedler *et al.* (1997), Gardiner & Whiting (1997), Hill (1996),

Moilanen (2001), Zairi (1999), and Yang (2003), amongst others. Despite the fact that many have taken stakes in building a framework for measuring organisational learning, there is no single exemplary framework that appears to be a good representation of the 'learning by organisation' paradigm. At the core of the majority of these works seems to be the old conviction that organisational learning is no more than just an extension from individual learning, referred to here as the 'learning *in* organisations' paradigm. In this way, the premise that organisations, by their own right, have the capacity or capability to learn has not yet been properly addressed. However, there are some who have tried to make contributions on this theme. For instance, Appelbaum & Reichart (1998) developed a survey instrument for measuring organisational learning ability, while Goh & Richards (1997) and Jerez-Gomez *et al.* (2005), proposed a benchmark of learning capability. Naot *et al.* (2004) in particular provide good conceptual instances on how to discern the quality of organisational learning. The work presented in this paper is partly inspired by this conception, in that it emphasises the relationship between different organisational facets. In the case of this paper, these are the relationships between the structural, political and cultural facets of organisational learning.

## 2.4 Indicators of Learning

In spite of the wealth of literature on organisational learning, disappointingly little seems to be known about indicators of learning. In fact, this is one of the areas that remain remote from research. The literature speaks about indicators of learning being trapped into copying ideas about individual 'human' learning process that reflect on behaviour versus cognitive changes. For example, Fiol & Lyles (1985) and Inkpen & Crossan (1995) consider that organisational learning involves both behavioural and cognitive changes. However, this assertion is also still a matter of some debate. For Argyris & Schön (1978), Senge (1990), Levitt & March (1988), Hedberg (1981), Huber (1991) and Akgün *et al.*, (2003), learning is more associated with cognitive elements (i.e. interpretation, reflection, consciousness, assumption, belief, etc), whilst Changelosi & Dill (1996), Herriott *et al.* (1985), Cyert & March (1963), Shrivastava (1983), Stata (1996), Haleblian & Finkelstein (1999) and Greve (2003) associate learning with adaptation or changes in behaviour. At a distance from this state of debatable conceptions, the core interest of the present study is to consider how the symptoms of (pre)occurrences of organisational learning can be sensed or indicated in a concrete form. The aim is to make any attempt at measuring organisational learning become feasible. This might be identified through the tangible existence of various explicit learning mechanisms in use. The next section analyses a conceptual framework that will be used, in part, to benchmark construction companies' learning performance.

## 3. CONCEPTUAL FRAMEWORK

Having reviewed the major generic organisational learning theories in a broad sense, this paper found a paradox in that most of these theories scarcely support the true existence of organisational learning *per se*, while they supposedly pursue understanding of the phenomenon of 'learning by organisations'. There are still many who analyse organisational learning as 'learning of individuals *in* organisations' or even simply assume that it is metaphorically similar to individual learning. However, a number of recent articles mark the necessary shift in paradigm (e.g. Lipshitz *et al.*, 2000; 2002). In this view, the occurrence of organisational learning is understood as 'learning by organisations' not 'by individuals *in* organisations'. This principle was first coined by Lipshitz *et al.* (2002) and is adopted in the present paper. Based on this argument, the idea of organisational learning mechanisms has emerged.

### 3.1 Organisational Learning Mechanisms

For the learning of individuals to becoming organisational learning, a set of infrastructures is needed. These are known as Organisational Learning Mechanisms. These mechanisms function as a bridge by which the learning of individuals *in* an organisation may be institutionalized into learning *by* organisations. This paper follows the definition of organisational learning mechanisms by Lipshitz & Popper (2002) and Armstrong & Foley (2003) with some adaptations.

Table 1. Organisational learning mechanisms in various forms

Locus of learning	Learning processes				
	<i>Pre-learning systems</i>	<i>Experience accumulation</i>	<i>Knowledge articulation</i>	<i>Codification/ Storage</i>	<i>Dissemination/ Distribution</i>
<b>Project Learning</b>	<ul style="list-style-type: none"> <li>• Project operating procedures</li> <li>• Strictly observed overlap for departing/ arriving members</li> <li>• Project information system</li> </ul>	<ul style="list-style-type: none"> <li>• Pre-project meeting</li> <li>• Developed groupthink</li> <li>• Project team communication</li> <li>• Informal encounters</li> <li>• Inter-project visits</li> <li>• Onsite information exchange</li> <li>• Project team exposure</li> </ul>	<ul style="list-style-type: none"> <li>• Project planning meetings</li> <li>• On-site project meetings</li> <li>• Post-project review</li> <li>• Project evaluation</li> <li>• Project progress meetings</li> <li>• Inter-project-meetings</li> <li>• On-site problem solving</li> </ul>	<ul style="list-style-type: none"> <li>• Project plan/audit</li> <li>• Milestones/ deadlines</li> <li>• Meeting minutes</li> <li>• Case writing</li> <li>• Project history files</li> <li>• Intra-project 'lessons learned' database</li> <li>• Learning histories</li> <li>• As-built drawings</li> <li>• Project progress reports</li> <li>• Project final reports</li> </ul>	<ul style="list-style-type: none"> <li>• Inter-project correspondence</li> <li>• Inter-project personal exchange</li> <li>• Project quality cycles</li> <li>• Staffing shift from project to home organisation</li> </ul>
<b>Organisation Learning</b>	<ul style="list-style-type: none"> <li>• Allocated resources available for learning</li> <li>• Flexible organisation to allow mobility of employees</li> <li>• Reward system</li> <li>• Established informing system</li> <li>• System for control mechanism</li> <li>• Reporting system</li> <li>• Evaluation system</li> <li>• Formalized relationship with boundary system</li> <li>• Reward system</li> <li>• Employee feedback system</li> </ul>	<ul style="list-style-type: none"> <li>• Informal organisational routines, rules and selection processes</li> <li>• Departmentalisation and specialisation</li> <li>• Benchmarking (internal &amp; external)</li> <li>• Imitation</li> <li>• Induction programs for new members</li> <li>• Staff development /on-the-job training</li> <li>• Re-use of experts</li> <li>• Professional-based networks</li> <li>• Inter-company based networks</li> <li>• External &amp; internal seminars</li> <li>• Initiative of individual learning</li> <li>• Partnering</li> <li>• Corporate mentoring</li> <li>• Environmental scanning</li> </ul>	<ul style="list-style-type: none"> <li>• Project manager camps</li> <li>• Knowledge retreats</li> <li>• Professional networks</li> <li>• Knowledge facilitators and managers</li> <li>• Personal reflection</li> <li>• Error corrections</li> <li>• Joint project research</li> <li>• After-action reflection</li> <li>• Review from success &amp; failure</li> <li>• In-house research improvement programs</li> </ul>	<ul style="list-style-type: none"> <li>• Drawings</li> <li>• Process maps</li> <li>• Project management process</li> <li>• Lessons learned database</li> <li>• Job descriptions</li> <li>• Routines</li> <li>• Standard operational procedures</li> <li>• Rules &amp; regulations</li> <li>• Artefacts</li> <li>• Diary</li> <li>• Reporting system</li> <li>• Individual systems design</li> <li>• Individual memory</li> <li>• Embedded experience</li> <li>• Formal learning procedure</li> <li>• Sub-contracting agreements</li> <li>• Engineering contract</li> </ul>	<ul style="list-style-type: none"> <li>• Communities of practice</li> <li>• Information technology</li> <li>• Regular formal &amp; informal meetings</li> <li>• Story telling</li> <li>• Informal communication</li> <li>• Updating &amp; coordinating meetings among various teams</li> <li>• Job/role rotations</li> <li>• Trade shows and exhibitions</li> </ul>

Organisational learning mechanisms, in simple terms, are therefore defined as the observable organisational sub-systems that are intentionally established to facilitate the development of and improvement to the *learning environment* for continuous learning. In other words, they are the context where the process of learning (i.e. accumulation, articulation, codification and dissemination) takes place on behalf of the organisation. These can be in the form of structural or procedural arrangements. There are overwhelming

instances of such mechanisms appearing in the literature (see, for example, Kululanga *et al.*, 2001; Prencipe & Tell, 2001; Franco *et al.*, 2004; Roth & Kleiner, 1998; Amstrong & Foley, 2003). However, this paper exclusively presents some key learning mechanisms that are relevant to construction companies, as suggested by some prior literature. In synthesizing the various useful learning mechanisms, a set of theoretical construction organisational learning mechanisms is prepared (see Table 1).

### 3.2 Framework for Benchmarking Organisational Learning Performance

According to Popper & Lipshitz (2000: 185), ‘organisational learning mechanisms link learning *in* organisations to learning *by* organisations in a concrete, directly observable and malleable fashion’. If organisational learning performance is what the organisation aims to measure, one may direct a glanced observation at whether organisational learning mechanisms are in existence in the first place; otherwise, there will be no organisational learning, in the sense that they may have not been institutionalized ‘formally’. However, Lipshitz *at al.* (2002) themselves argue that whilst these structural facets are fundamental, alone, they are not sufficient to accurately gauge the *quality* of organisational learning performance. In this paper, it is argued that the degree of organisational learning performance depends on two additional facets of organisational learning, i.e. political and cultural. The proposed framework (see Figure 2) hypothesizes the linkage between these organisational learning facets. It starts with the political facet, as represented by some organisational political interventions (Argyris & Schön, 1996; Ferdinand, 2004), which in turn will instigate the presence of a set of structural infrastructures in the form of organisational learning mechanisms. Together, both organisational political interventions and organisational learning mechanisms will facilitate the formation of learning cultures and norms (Yang, 2003; Jerez-Gomez *et al.*, 2005), which are prerequisites to the occurrence of learning by organisations. How this affects the presence of learning environments (Pedler *et al.*, 1997; Thomsen & Hoest, 2001) can be observed and measured through the proposed organisational learning key performance indicators. The ultimate attainment of such processes is the state of a highly facilitative learning environment. The end story will be the identification of characteristics that represent a model of a learning organisation (see the characteristic of learning organisations).

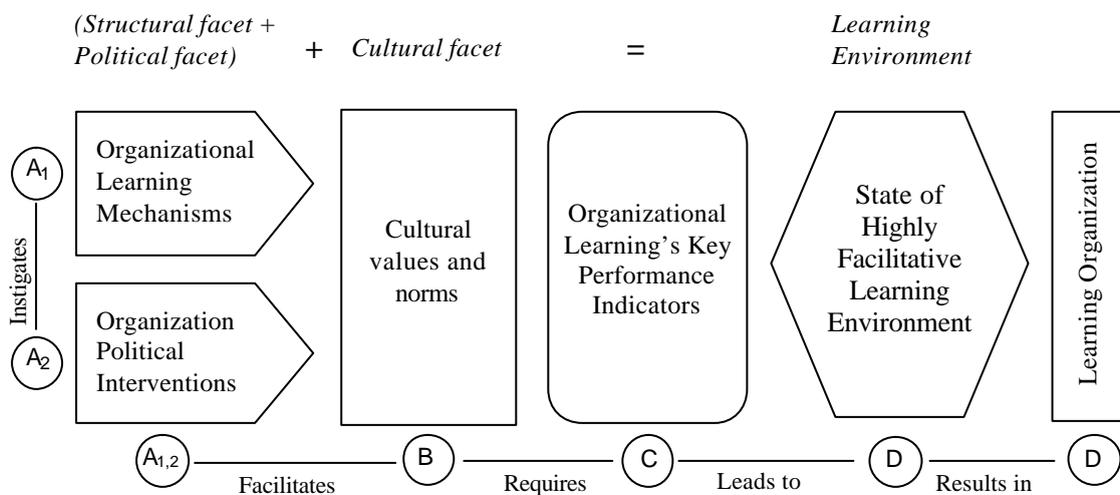


Fig. 2. Framework for benchmarking organisational learning performance

### 3.3 Organisational Learning Key Performance Indicators

The aforementioned key characteristic elements of a learning organisation serve as qualitative features that are difficult to measure. In practice, there is a need for more substantive indicators that are operationally observable and recognisable for the purpose of measurement. Drawing on these elements, the paper develops a model of organisational learning key performance indicators. This conceptual framework functions as a benchmarking instrument which, first of all, will be employed in the next stage as part of the research process, i.e. to segregate samples of construction companies in the order of their learning performances. It should be noted here, however, that learning performances in the context of this paper are basically mere symptoms of the (pre)occurrence of organisational learning *per se*. In concrete terms, these are the formal existence of organisational learning mechanisms. The instrument surveys the organisations in terms of the degree (intensity) of their quantitative engagement with various learning mechanisms. The qualitative aspect measures the climate of the learning environment, involving organisation members at various levels. Figure 3 presents a set of key performance indicators of organisational learning that will function as measurement criteria following the development of a measuring questionnaire.

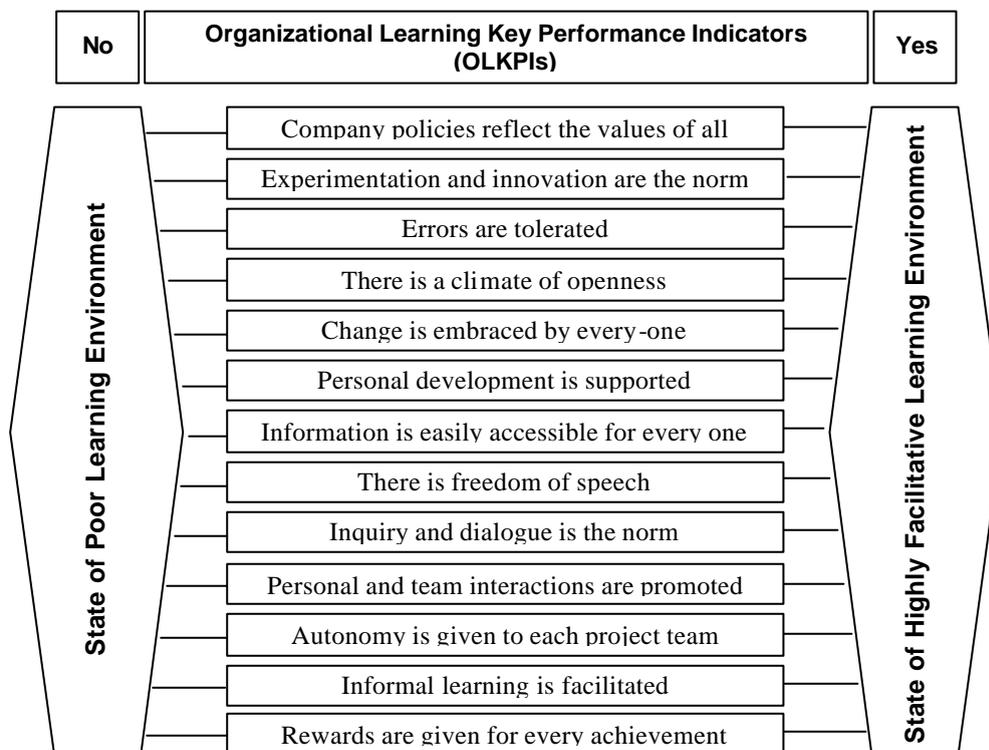


Fig. 3. Organisational learning key performance indicators

## 4. METHODOLOGY

This research is intended to discover how construction companies learn. The aim is to test the previously stated propositions about the construction context with respect to organisational learning. The main objective, however, is not the examination of learning *per se*, but rather to seek how it ought to be practiced in the industry. This will eventually involve the evaluation of current generic models in terms of their applicability to construction companies and the generation of a specific model for the process of organizational learning in the context of project-based construction organisation. The overall research methodology has been designed

to follow six major stages. In the *Review of the Current State of Knowledge*, a literature search is carried out to establish the theoretical underpinning of the research. It is based on the generic theories of organisational learning, supplemented by a small number of construction-specific research studies. This is followed by a *Business Environment Audit*.

To provide the sample for the study, approximately 100 construction companies linked to the *Constructing Excellence* initiative in the North East are being audited to establish their business environments, such as their position in the market, typical procurement experience, external and internal business contexts and in particular how they manage themselves. The objective is to identify a comparable group of companies that can be analysed in depth. For the purpose of primary *Data Collection*, a process of screening on the basis of consistency of the business environment criteria will be undertaken. The selected companies will then be invited to participate in the full data collection process. The data collection process will be multifaceted in nature and dependent upon the learning mechanisms in practice.

The *Data Analysis* will determine the extent of engagement with organisational learning key performance indicators derived from the review of the current state of knowledge. 20% of the selected companies – those that exhibit greatest correlation with the key performance indicators - will be involved in the model building stage via case study methodology. In *Model Building*, the learning processes undertaken by the sample of high achieving companies, in terms of their learning performance, will be tested against the generic organisational learning theories to build a construction-specific model. The model will then be *tested* on another 20% of companies – those that exhibit the least correlation with the key learning performance indicators.

## 5. PRELIMINARY FINDINGS

A Business Environment Audit Questionnaire was sent out to a number of construction companies engaged with the Government-supported *Constructing Excellence* initiative in the North East of England. A set of questions was asked relating to geographical area of most work, category of construction activity, sector of activity, type of building, nature of construction work, size of projects, experience of procurement systems, number of direct employees, typical project team size, project organization, and willingness to support future research. Some companies have responded to this questionnaire, and more responses are being received.

A preliminary analysis of these responses revealed some interesting findings. Although samples were exclusively drawn from the North East region in terms of where the companies' offices were located, it was anticipated that they might work beyond this area. Responses revealed that 32% of the companies extended their areas of activity to other areas of the UK. Local companies – those that focus their work within the North East only-- accounted for 58% of the total number of responding companies. The activities with which the respondents engage were equally distributed between the *public* and the *private* sector.

Respondents were engaged with five types of construction project, namely residential, office, leisure, retail and community. The main activity was office building, which was occurring in the North East. Correspondingly, *new build* construction was more prevalent (72%) than *refurbishment* (28%). The median size of the projects was in the range of £1,000,000 - £5,000,000. However, in general the largest projects in which respondents had engaged since 2000 most commonly exceeded £10,000,000. Furthermore, findings from the business environment survey also disclosed some preliminary data about how project teams within the construction companies were organised, i.e. whether they were *reformed for each new project* or *stayed together*.

In summary, although still relatively small in number, the quality of the responses was excellent in terms of their consistency, completeness and clarity with regard to the information provided by respondents. There was no indication of confusion or difficulty in answering the questions in the questionnaire, signifying its efficiency and appropriateness. In themselves, these tentative findings contain new empirical data and present a fascinating snapshot of the North East construction activities.

## **6. CONCLUSIONS AND FURTHER ACTION**

This paper has presented some reflections on the current state of the literature on organisational learning. The key to this paper is a presentation of a conceptual framework for benchmarking organisational learning performance. This was followed by the presentation of two sub-frameworks: organisational learning mechanisms and organisational learning key performance indicators. It is proposed that this framework be used as a model for measuring organisational learning. This conceptual framework will then be tested empirically during the next stage of the research process. It incorporates three organisational learning facets: structural, political, and cultural.

At the present stage of analysis, a business environment audit has been partly completed and a preliminary analysis of responses to the questionnaire prepared. An interesting image of the North East construction activity as a result of this analysis has also been portrayed. This also offers a picture of some indicative characteristics regarding how construction companies organize their projects. Albeit a fraction of ongoing major research, this preliminary report paves the way for some immediate reflections on how the next stages of the research are organized, as will be presented below.

### **6.1 Roadmap to the Way Ahead**

The next stage of the study will be the primary data collection. The initial procedure is to select a comparable group of responding companies based on the consistency of business environment criteria. A comparable group of construction companies that is anticipated to emerge from this segregation process will then be assessed as to whether they will be technically and theoretically qualified to be invited to participate in further in-depth investigation. These selected companies will go through a test of their learning performance using a proposed model of the organisational learning key performance indicators. The outcome of this test is expected to sort and list these companies in terms of their degree of learning performance. Approximately 20% of these companies – the high achievers - will be involved in the model building stage through case studies. At the heart of this procedure is the development of a construction-specific organisational learning model. This involves the identification of learning mechanisms that allow project teams to transfer their learning from projects to their home organisations. In the same vein, there should be other secondary mechanisms by which organisations inform new project teams. All in all, a representation of how a project-based construction organisation learns is hoped to be replicated in this model. The final procedure of the research will involve model testing and refinement of the organisational learning key performance indicators model.

Two keys contributions are anticipated to materialize upon the completion of this PhD study. The primary contribution will be the generation of a model, specific to construction companies, which displays the process of organisational learning from existing projects for the benefits of future projects. Secondly, as part of the process, knowledge will be gained in terms of synthesising theoretical perspectives in generic organisational learning. One of the outcomes of the latter is the key performance indicators model that functions as the analytical

framework for this research. At present, as can be seen from the list of references used in this paper, there is little current knowledge on the business environment of construction companies and data of this kind will represent additional knowledge. There is also little known about the extent and nature of the learning processes currently being used by construction companies and this study offers insights in that direction as well.

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