

LINKING LEARNING CAPACITY AND BUSINESS PERFORMANCE:  
A RESEARCH AND EMPIRICAL ASSESSMENT

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**Abstract**

There has been little research that includes reliable deductions about the influence of knowledge and its associated learning processes on business performance. For this reason, the main objective of the present study is to empirically explore the link between learning flows in organizations, resulting knowledge stocks, and business performance evaluated in both financial and non-financial terms. Using data from 111 companies, we conduct our research through a structural equation modeling. In doing so, we establish a measurement model for the main constructs and examine the paths between them. Results show the positive link existing between: (i) learning flows and knowledge stocks; (ii) knowledge stocks and non-financial performance; and (iii) non-financial performance and financial performance.

**Keywords**

Learning capacity, Performance, Knowledge Management



## INTRODUCTION

Today, there is no doubt in recognising knowledge as one of the most strategic weapons that can lead to achieving competitive success (Grant, 1996; Spender, 1996). Hence, the ability to create knowledge, quickly share it, and apply it where, how and when necessary is one of the most critical business competencies to confront environmental requirements (Nonaka and Takeuchi, 1995; Grant, 1996; Nonaka and Toyama, 2003). This ability to adapt and leverage knowledge within organizations is the result of learning processes (Vera and Crossan, 2003), which involve the flowing of knowledge throughout the organization. Research has often described the organizational potential to learn using this link between knowledge and its associated learning processes (Dierickx and Cool, 1989; Decarolis and Deeds, 1999; Bontis et al., 2002). This potential determines the organizational capability to learn.

Taking a theoretical or practical approach a growing body of literature has long acknowledged the importance of knowledge and learning processes to overall business performance. The knowledge-based view of the firm argues that heterogeneous knowledge bases and capabilities among firms are the main determinants of performance differences (Grant, 1996; Decarolis and Deeds, 1999; Bontis et al., 2002), so firms must exist to create, share and capitalise knowledge. Theoretical progress has also been made from the knowledge management literature in identifying the direct link between knowledge management and business performance (Choi and Lee, 2003; Cecez-Kecmanovic, 2004; Chuang, 2004). Past studies have also tried to determine the link between organizational learning and business performance (Cangelosi and Dill, 1965; Slater and Narver, 1995; Calantone et al., 2002; Ellinger et al., 2002).

However, we think the analysis of the effects of a learning capability -in terms of both knowledge and its related learning processes- on business performance is one of the most stirring to carry out positive contributions to this field for two reasons. First, there is no general consensus on how to define and operationalize the learning capability construct. Most researchers have viewed it as a single dimension, and it is also difficult to find reliable measures for this topic. Few empirical studies have systematically analyzed the measurement properties of this construct. Second, the relationship between learning processes, knowledge and business performance remains unclear. Empirical work about this topic is still limited and conclusions are unsatisfactory or even contradictory (Crossan et al., 1995; Castaneda, 2000; Ellinger et al., 2002; Vera and Crossan, 2003).

The present study creates insight into the relationship between the learning capability of organizations and business performance. For this exploration, a construct of learning capability is developed. Both knowledge and learning processes are identified as components of the learning capability. Learning capability is also proposed to be an important antecedent of business performance, which is valued in financial and non-financial terms. In particular, we develop a conceptual model, drawn on organizational learning research, to explore how learning processes enacts knowledge in organizations, and how it can lead to improvements in business performance. In the next section, the conceptual framework is presented, and a set of testable hypothesis is proposed. Methods of study are then introduced, which includes information about the sample, measures, data analysis and results. Following a discussion of results, limitations, and implications for future research are offered.

## THEORETICAL FRAMEWORK AND HYPOTHESIS

The framework in Figure 1 was derived from literature on organizational learning, knowledge in organizations and intellectual capital (Bontis et al., 2002; Calantone et al., 2002; Choo and Bontis, 2003). Based on the literature, the learning capability is associated to two dimensions: the knowledge stocks and the learning flows. Specially, researchers have concluded that knowledge stocks that are build, adapted and leveraged through numerous learning flows (Diericks and Cool, 1999; Sanchez, 2001; Crossan et al., 1999; Bontis et al., 2002). In addition, while there's no agreement about the specific role of learning flows on business performance, it is considered that an organization's knowledge stock is likely the main force to succeed in the satisfaction of environmental requirements, which leads to improved non-financial business performance. Furthermore, non-financial performance is also an antecedent of financial performance (Prieto and Revilla, 2004). It is also suggested that the business performance, and in particular the financial performance, is not an ultimate consequence of the knowledge stocks, but provides important feedback about the efficiency of learning flows and, ultimately, affects how an organisation continues to learn (Mintzberg et al., 1995; Dragonetti & Roos, 1998). Therefore, despite we will not examine this link, we can point out that the capacity to learn in organisations is not simply a collector of knowledge but a processor of it which influences the degree to which organisations are likely to promote continuous learning as a long-lasting core competency (Calantone et al., 2002).

*<Insert figure 1 about here>*

### The learning capability and its essential dimensions

Although many authors on organizational learning have implicitly shown the importance of the learning capability, it is difficult to find an explicit definition of the concept. Descriptions about the organizational potential to learn are often made through the link between knowledge and learning processes (Diericks and Cool, 1989; Decarolis & Deeds, 1999; Bontis et al., 2002). Knowledge is an established theoretical construct that has been proposed as heterogeneous resource that firms value in different manifestations (Amin and Cohendet, 2004). The main types of knowledge distinguished in the literature are: explicit knowledge versus tacit knowledge, and individual knowledge versus collective knowledge. Together with it, it is also possible recognize two other dimensions of knowledge in order to explain the adaptive performance of firms (Blacker, 1995; Cook and Brown, 1999): knowledge as something that individuals, groups or organizations have (knowledge as cognitive possession) versus as something that individuals, groups and organizations do (knowledge as practice). Knowledge that is possessed has been studied from a cognitive viewpoint, while knowledge that is practice is the result of a behavioural perspective that introduces the study of "knowing". According to it, knowledge should be understood as multi-faceted, comprising cognition and actions, and existing at the individual, group and organizational level.

But knowledge existing within organizations needs to be continually renewed, integrated and translated into competence (Elkjaer, 2001). It is thus necessary to develop learning processes as an essential requirement to produce new knowledge that, when engrosses the

initial knowledge, will lead to adjustments in the original cognition, actions, or both (Vera and Crossan, 2003). Hence, even when they interact with one another throughout the organization, the learning processes and knowledge are two distinct but related concepts. Knowledge is the content of the learning processes. In particular, it is argued that all organisations uphold a *stock* of knowledge that needs to continually *flow* through learning processes in order to fit environmental requirements. (Diericks and Cool, 1989; Coakes et al., 2004). The stock of knowledge refers to all that is already known or needs to be known, which includes aspects of both cognition and action. The learning flows captures how the organization interacts with the organizational members and the environment (Nonaka and Toyama, 2003), and can be considered as the enacting processes of knowledge stocks so that new forms of knowledge emerge (Cook and Brown, 1999). These learning flows take knowledge stocks and result in new or modified knowledge stocks for making sense of the world and taking action in it (Sanchez, 2001). Then, learning flows constitutes a reinforcing mechanism for the original stocks of knowledge by continually leveraging different stocks of knowledge, tacit and explicit (Bontis et al., 2002).

To better understand the role of learning flows and knowledge stocks within organisations, the concepts of exploration and exploitation have been considered especially constructive (March, 1991; Crossan et al., 1999). Exploration flows play an essential role in renewing the knowledge stocks necessary to compete in changing markets, but in doing so, also enhances a firm's existing knowledge. These flows take place with the creation of new knowledge by individuals and the assimilation of that knowledge, which happens when individuals share knowledge within groups until being progressively institutionalised by the organisation. Exploitation flows reflect how the firm harvests and incorporates existing knowledge into its activities while, at the same time, new knowledge may emerge from experience. These flows encompass processes that transmit embedded organisational knowledge that has been learnt from the past down to the groups and organisational members. Therefore, the organizational learning capability is comprised by continually evolving knowledge stocks that continually flow both upward and downward all of individuals, groups and the overall organisation (Nonaka and Takeuchi, 1995; Crossan et al., 1999). The continuous reproduction between knowledge stocks and learning flows results in the reinforcement of existing stocks of knowledge in relation to new ideas. Learning flows are thus necessary to ensure that sticky knowledge is transformed into fluid knowledge (Coakes et al., 2004). Therefore, on the basis of previous ideas, we can form the following hypothesis:

*Hypothesis 1: The higher the levels of learning flows developed in organisations, the higher the levels of knowledge stocks existing in the organisation.*

### **The learning capability and business performance: the key role of knowledge**

The development and flowing of knowledge stocks through learning is not an end by itself. It is regarded as a potential source of sustainable competitive advantage (Coakes et al., 2004), and thus it is pursued by organizations as an intermediate stage that explains differences in performance. Researchers sustain different views about the link between learning flows, knowledge stocks and business performance (Huber, 1991; Crossan et al., 1995). Most of the research contributions defend a neutral-to-positive link between learning

flows and performance (Crossan et al., 1995; Bontis et al., 2002), but state that knowledge stocks are sure precedents for better performance (Stewart, 1997; Bontis et al., 2002). Then, while the direct relationship between the learning flows and business performance is controversial, it is considered that effects of the learning capacity on organisational performance are mainly derived from the knowledge stocks.

Really, organisations that want to enhance business performance need to nurture the capabilities they need to grow and maintain their competitive advantages. These capabilities are underpinned by knowledge (Marr and Schiuma, 2001) and, then, knowledge stocks can be considered a precondition for the organisation's success. Knowledge impact on business performance has been examined by several studies (Appleyard, 1996; Argote and Ingram, 2000; Prieto, 2003; Soo et al., 2004) that argue that knowledge, in amount or quality, forms the basis of competitive advantage in organizations. Conversely, there is no complete nor ideal way to measure business performance and, then, to measure the effects of the learning capacity. The idea of the realistic existence of a positive link between the knowledge and business performance often relates the potential effects to the economic and financial success and, in fact, it is possible to use some kind of indicators about the financial success. However, business performance is a multidimensional concept, nor easily measurable and more complex than the financial ratios and indicators usually applied. Then, the potential effects of knowledge on business performance cannot be determined exclusively by a financial assessment linked to a pyramid of financial ratios (Kennerley and Neely, 2000). Effects also deal with the reaction of others (e.g. customers, employees, etc.) to the actions of the organisation. This reaction will be better when the organisation has knowledge improved by its learning potential and this knowledge guides the fulfilment of others' expectations along with the organisation's purposes.

In fact, there is an only way to enlarge an organization's financial performance, and it is through the identification and satisfaction of market demands (Neely and Adams, 2001). To a great extent, this satisfaction relies on customers' perception about the organization's activities, products or the value of service. Then, customers' perceptions will be improved to the extent in which organizations develop its ability to offer them its active knowledge (in the form of products, services and processes), satisfying their needs and strengthening the established relations. In other words, the organisation must have knowledge of how to serve the market in order to recognize solutions to customer needs, provide them a vital service, and make it harder for them to switch to another supplier. As stated by numerous studies (Slater and Narver, 1995; Saint Onge, 2002), a strong connection exists between the quality of the relationships and customer satisfaction, the durability of the relationships and the resulting profitability. Thus, if established relations with customers prosper, it is only a question of time to gain a positive result on the financial performance.

The need for non-financial measures in order to assess a company's knowledge-based success is recognized in many popular performance management and measurement frameworks that have started to introduce new measures. In example, the numerous efforts to measure intellectual capital in organisations have included several discussions about performance measurement arguing that it is necessary to balance the traditional economic valuation with the non-financial valuation of organisational performance (Stewart, 1997;

Martin, 2000; Carlucci et al., 2002). Kaplan and Norton (1992; 1996) proposed their famous Balanced Scorecard, providing a multi-dimensional corporate measurement system, which includes financials, customers, internal processes plus innovation and learning. The EFQM Excellence Model have impacted the corporate measurement agenda by encouraging that customers results, employees and impact on society results are key performance results that must be considered as the main performance criteria (what an organisation achieves). The Skandia Navigator is also centred on the "Human focus" (Edvinsson and Malone, 1997). And a more recent measurement model, the Performance Prism by Neely and Adams (2001), explicitly adopts a stakeholder centric view of performance measurement together with more traditional aspects of performance measurement. The stakeholder view considers that, together with customers, modern business environment is characterized with increased importance and strength of employees and society in general. Then, it includes customer loyalty, company names and brand image, and other fundamental links between.

Therefore, companies having a superior knowledge base are able to coordinate and combine their traditional resources and capabilities in new and distinctive ways, providing more value for their customers and, in general, stakeholders than can their competitors (Teece et al., 1997). Then, the knowledge stocks are proposed to affect the non-financial business performance and, accordingly, the following hypothesis is set forth:

*Hypothesis 2: The higher the levels of the knowledge stocks existing in organisations, the higher the levels of the non-financial performance generated in the organisation.*

### **Non-financial performance and financial performance**

Even when firm's financial performance is influenced by numerous factors (economic conditions, changing government regulations which may favour one company over another, technological developments, changes in the cost of producing and delivering products or services due to macro-economic shifts, etc), it seems rather reasonable to think that there may exist a significant direct relationship between a company's overall stakeholders' satisfaction and the financial performance. Generally, non-financial performance has no intrinsic value for companies' directors. Rather, this non-financial performance can be used as a leading indicator of financial performance and, specially, future financial performance that is not contained in contemporary accounting measures. In marketing, a fruitful stream of research has identified a strong positive link between customer satisfaction, market share and profitability (Capon et al., 1990; Anderson et al., 1994; Anderson and Fornell, 2000). Customers' satisfaction may mean more customers will purchase and repurchase in the future. Satisfied customers are likely to buy more frequent and in a greater volume and acquire other products and services offered by the company. In addition, consistently providing products and services that satisfy customers should increase the financial performance by reducing failure cost. And the more the number of customers, the more the organisational profitability. Similarly, if a firm has strong employees' satisfaction, it should be reflected in the company's economic returns because it involves a better efficiency and productivity. Moreover, the cost of attracting new customers or employees should be lower for organisations that achieve a high level of reputation. A high reputation can also lead to introduce new products and services by reducing the buyer's risk of trial (Anderson et al., 1994). And reputation also can

be beneficial in establishing and maintaining relationships with key suppliers, distributors and potential allies (Anderson et al., 1994). In accordance, our last purpose is to examine if the non-financial performance can be considered a precedent of the long-term financial returns.

*Hypothesis 3: The higher the levels of non-financial performance, the higher the levels of financial performance.*



## EMPIRICAL RESEARCH

### Data collection and sample characteristics

Survey methodology has been used for the empirical analysis. The questionnaire has been designed and developed from a thorough literature review, and simplified by us in some indicators. The questionnaire was validated through a pre-test that was carried out through several personal interviews with senior managers. These interviews allowed us to clarify our survey items and rectify any potential deficiency. Minor adjustments were made on the basis of specific suggestions.

The questionnaire was then administered to a random sample of 1.064 Spanish Companies randomly selected on the basis of the database *Duns & Bradstreet* (50.000 Main Spanish Companies, 2000). Our sample consists of companies reporting between 50 and 2.500 employees. Sampled firms fit into activities –from industry and service- facing dynamic and competitive environments, covering a wide enough range so as not to restrain the scope of analysis. Sample selection mainly was moved for two reasons. First, we have tried to target companies where issues of knowledge and learning are generally recognized as relevant and general. Second, we use a diverse sample to increase the generality of results. Mail surveys were sent to the CEO of the company or a reasonable substitute such as the Human Resource Manager (mainly for large companies), who have been identified as key respondents based on two criteria (Andreu and Solé Parellada, 2001; Gardiner and Leat, 2001; Bontis et al., 2002): (a) possession of sufficient knowledge and (b) adequate level of involvement with regard of the issues being investigated. To assess the degree to which common method bias might present a problem, we subjected all scale items for similar constructs to a factorial analysis with a varimax rotation (Seibert et al., 2001; Tippins and Sohi, 2003). Results indicated that the items loaded cleanly on the factors representing the expected constructs. Thus, we found no general factor that would have emerged due to common method variance.

Table 1 summarizes the respondent characteristics in terms of industry type and total number of employees. A total of 111 surveys were returned, representing a 10.52% response rate. Respondents were fairly distributed across manufacturing (8,88 per cent) and services (10,93 per cent). Firm size was also quite well distributed, with the exception of companies ranging between 100 and 250 employees, which represent a major group, and companies with less than 50 employees, which represent a marginal group.

*<Insert table 1 about here>*

### Measures description

The measurement of the analysis variables has been built on a multiple-items method, which enhances confidence about the accuracy and consistency of the assessment. Each item was based on a five point Likert scale and all of them are perceptual variables. Table 2 displays items used to measure the analysis variables.

*<Insert table 2 about here>*

### *Learning capability*

We have modeled the learning capability in organizations as a multidimensional construct in which knowledge stocks and learning flows are considered as representative dimensions. Both knowledge stocks and learning flows are treated as first-order indicators of the second-order construct, the learning capability.

In particular, we have considered that knowledge stocks in organizations exist at several levels (Nonaka and Takeuchi, 1995; Crossan et al., 1999): the individual, the group and the organizational levels. Obviously, organizations learn through their individual members, which develop knowledge through their own personal experiences (Nonaka and Takeuchi, 1995). Some individual knowledge may be applied directly to perform the assigned task, but much individual knowledge must be shared with other individuals in a group before that knowledge becomes a basis for taking action (Sanchez, 2001). This way, individuals inside groups develop knowledge in common in order to perform tasks in a coordinated fashion. Similarly, groups in an organization interact, communicate their knowledge to other groups and acquire other knowledge required to put their own knowledge into action. As a result, individuals and groups play an important role in the integration of some knowledge in the organization in such a way that knowledge is embedded in the organization's systems, routines and values (Nonaka and Takeuchi, 1995; Sanchez, 2001). Accordingly, we have measured the *knowledge stocks* by including 15 items: five items pertaining to the individual stocks, five items for group stocks and five items for the organizational stocks of knowledge. Most of the measures were adopted from relevant literature, especially Bontis et al. (2002).

In the same way, we have mentioned that learning flows in organizations are aimed at both the exploration and the exploitation of knowledge. As stated by Crossan et al. (1999), exploration flows take place when individual members generate new knowledge, and groups and the organization progressively integrate it. Exploitation flows encompass processes that take and transmit embedded organizational knowledge that has been learnt from the past down to groups and individual members. Accordingly, *learning flows* have been measured by using 10 items, five of them pertaining to exploration flows and five items to exploitation flows. Once more, these items are mainly based in Bontis et al. (2002) research.

### *Business performance*

As we have previously argued, we have measured business performance from a financial and non-financial perspective. Identifying optimal measures for business performance is inherently problematic, and there is not an only nor upper measure to assess the global impact of the learning capability on business performance. In this study, we adopt two variables modelled as uni-dimensional constructs with multiple-indicator measures. *Non-financial performance* has been measured addressing issues such as customer's satisfaction (Ellinger et al., 2002), number of customer's growth (Kaplan and Norton, 1996; Saint Onge, 2002), employee's satisfaction (Johansson et al., 1998; EFQM, 2001, Goh and Ryan, 2002) and the organizational reputation (EFQM, 2001; Bontis et al., 2002). *Financial performance* is described through return on assets (Bierley and Chakrabarty, 1996; Calantone et al., 2002; Ellinger et al., 2002; Goh and Ryan, 2002), sales growth (Tippins and Sohi, 2003), overall profitability (Johansson et al., 1998; Tippins and Sohi, 2003), average productivity (Vekstein, 1998; Ellinger et al., 2002) and cost reduction (Ellinger et al., 2002).

## ANALYSIS AND RESULTS

### Psychosometric proprieties of measurement scales

Figure 1 illustrates the proposed latent variable model, showing all structural paths. Before testing this model, a series of test was performed to asses the unidimensionality of the measures. Because multiple-item construct measures variables, and to verify that items tapped into their stipulated construct, a confirmatory factorial analysis (CFA) was employed to determine the validity of the constructs.

Table 3 summarizes the number of items and the results of the reliability and validity test for the analysis variables. The internal consistency measures (Cronbach's alpha) were obtained in order to assess the reliability of the measurement instruments. Three separate confirmatory factor analysis were conducted by using LISREL 8: two corresponding to each of the broad dimensions of the learning capability (the sets of constructs for both the knowledge stocks and learning flows), and one more for business performance. The paths were examined using t-statistics (for expected factor loadings), whereas paths that were not specified were evaluated using standardized residuals and modification indices. Based on these statistics and theoretical considerations we deleted items if appropriate (Anderson and Gerbing, 1988). Convergent validity was established by confirming that all scale items loaded significantly on their hypothesized constructs factors (Anderson and Gerbing, 1988). Discriminant validity was assessed by comparing the  $\chi^2$  differences between a constrained CFA (where the interfactor correlation was set to 1, indicating they are the same construct) and an unconstrained model (where the interfactor correlation was free). All  $\chi^2$  differences were found to be significant, providing support for discriminant validity (Anderson and Gerbing, 1988). Overall, the fit of the models were good, with GFI, AGFI, RMR and CFI all within recommended values.

We have previously defined learning capability is a higher order construct composed of knowledge stocks and learning flows. To confirm the multidimensionality of the learning capability as a higher-order construct we ran a second-order CFA. Table 3 shows how the loadings of the measurement items on the first-order factors, and the loadings of the measurement items of the first-order factors (knowledge stocks and learning flows) on the second-order factor (learning capability) were all significant ( $p \leq 0.005$ ). Further, the goodness of fit indices was also excellent. This second-order CFA was estimated by resuming in single factors the indicators of the knowledge stocks construct (individuals, group and organizational stocks) and the learning flows construct (exploration and exploitation) through principal components analysis (using SPSS 10.0 for Windows).

*<Insert table 3 about here>*

### Results of path analysis

We use a structural equation model (conducted by LISREL 8) to determine the significant paths between the learning capability, non-financial performance and financial performance. This analysis has been conducted in view of the preceding confirmatory analysis. Then, fixed

lambda values ( $\lambda_{ij}$ ) and measurement error variances are specified a priori in base to the previous measurement models estimations. Results are shown in Figure 2, which illustrates the estimated path coefficients and their associated t-values (in parenthesis) as well as the goodness of fit indices (which prove a good fit for the model).

*<Insert figure 2 about here>*

All proposed paths are significant. First, the path coefficient from learning flows to knowledge stocks is 0.994, which supports the existence of a strong and significant link ( $t = 11.982$ ,  $p < 0.05$ ) as stated in our hypothesis 1. Thus, learning flows support and improve adequate knowledge stocks, so that a dependence relationship exists between both dimensions in order to develop a learning capacity. Second, we can also observe the positive and statistically significant coefficient ( $t = 9.086$ ,  $p < 0.05$ ) on the path from knowledge stocks to non-financial performance, which reveals a link between both constructs. So, knowledge stocks significantly affect non-financial performance, which supports hypothesis 2. Finally, the significant ( $t = 4.606$ ,  $p < 0.05$ ) path coefficient from non-financial performance to financial performance is 0.471 and, then, non-financial performance grounds the financial success as suggested in hypothesis 3.

## DISCUSSION

This research has examined the link between the learning capacity and business performance. Our empirical analysis has the following contributions. First, it is established a measurement model for the learning capacity in terms of learning flows (exploration and exploitation) and knowledge stocks (individual, group and organizational stocks). Second, it is empirically tested the statistically significant and positive link existing between the learning flows, the knowledge stocks and business performance, in both non-financial and financial terms. In particular, it is shown that learning flows strongly guide the improvement of knowledge stocks, which, in its turn, generate a non-financial performance as a precedent for a financial one.

First of all, learning capability is confirmed as a higher-order construct that involves both knowledge stocks and learning flows. The knowledge stocks include all that is already known or needs to be known -knowledge and knowing-, and the learning flows are more concerned with the relationship between knowledge and knowing at the individual, group and organizational levels. Following the scale development of Bontis et al. (2002), this study strongly supports the original conceptualization of the construct so that learning capability can't be understood without one or another. However, future explore should explore knowledge stocks and learning flows sub-dimensions thoroughly. Second, we confirm the existence of a link between the learning capacity and business performance, which (1) is derived from knowledge stocks, but in such a way that learning flows strongly act as an improving mechanism on the knowledge stocks; and (2) the success of the learning capability must be assessed through non-financial and financial measures of business performance.

In fact, there is a strong link between the learning flows and the knowledge stocks, which is no surprising if considering both of them as dimensions of the learning capability. Learning flows are necessary for the creation, integration, transformation and utilization of knowledge stocks as a previous and necessary step for knowledge to yield positive results. Moreover, the effectiveness of the learning flows can be assessed on the basis of their purpose of guiding knowledge towards the creation of value. Without learning flows, knowledge stocks may lose their value. Hence, to build a real learning capacity, the relevant problem for practitioners when managing knowledge is to enact multiple learning flows that constantly sustain and leverage key knowledge stocks for the organisational success. In this sense, knowledge management can be considered as an essential enabler for this dual knowledge leveraging and, then, to extract from knowledge a performance advantage.

In addition to previous arguments, we have established that there is no a straight forward link between learning flows and business performance, but rather a more complex relationship in which knowledge stocks are a necessary "middle step". Organisations can initiate learning flows almost instantaneously, but it does not mean that directly learning yields a positive result. Positive results emerge from knowledge stocks, which are not instantaneous but an enduring result of learning flows. These knowledge stocks are the ground of the organisational capabilities required to efficiently develop the company's processes, products and value of service, and thus, knowledge stocks strongly determine the organizational potential to create value for stakeholders as a precondition of financial

achievements. It is thus highlighted the positive relationship between knowledge stocks and the non-financial business performance –always considering that knowledge stocks must regularly evolve through learning flows in order to maintain that level of competence along time-. Specifically, managers play a key role in deciding which knowledge is relevant to be aware of and solve those customer's problems that may constitute a market opportunity. Those who lack this knowledge will find it difficult to formulate an effective strategy to introduce and sell new products/services in such a way that value for stakeholders is created.

Finally, we have also found the existence of a significant link between the non-financial performance and the financial performance. However, this link is weaker in magnitude than the previous ones cause, in fact, reported financial performance is influenced by many factors over time (i.e., economic environment, competitors' actions, technological developments, etc). Likewise, we think this weaker link reveals that manifestations of financial improvements from improving non-financial performance may not occur in the same proportion nor instantaneously. Managers must thus realise that satisfied customers and stakeholders may not be automatically profitable and, moreover, that satisfied customers (stakeholders) are not always profitable ones. Because efforts to increase current stakeholders' satisfaction primarily affect future actions and behaviours, the greater portion of economic returns from improving stakeholders' satisfaction also will be realised in subsequent periods. This all implies that a long-run perspective may be necessary for evaluating the overall effects of learning and knowledge on business performance. Likewise, stakeholders' profitability and, then, the financial value of the learning capability may be dependent on characteristics and contextual conditions such as the organizational age (Calantone et al., 2002), industry type (Choi and Lee, 2003), market power (Tippins and Sohi, 2003), entrepreneurial orientation (Wiklund and Sheperd, 2003), and environment dynamism.

In summary, the relevant problem for practitioners is to enact a learning capacity by promoting multiple learning flows that constantly sustain the knowledge stocks required for creating value for stakeholders. Stakeholders must be considered crucial for organizational success, and companies that really care for their stakeholders demonstrate better financial performance. Moreover, managers must neither forget that, first, the collection of a worthy knowledge stocks is not immediate, but a result derived from the enactment of learning flows along time, and second, that satisfied customers (stakeholders) are not always profitable ones.

We can thus presume that the organizational ability to learn is not an immediate determinant of superior business performance, but it comes to happen on the long-term.

## LIMITATIONS AND FUTURE RESEARCH

This study is subject to a number of limitations that need to be addressed. As a first limitation, this study emphasizes the importance of learning capability for business performance, but does not address the issue of how learning capability should be carried out. Future research could identify the antecedents of learning capability and construct a comprehensible framework of both antecedents and consequences. Literature suggest the importance of knowledge management for business performance (Carlucci et al., 2002; Vera & Crossan, 2003), so we think the analysis of knowledge management as enabler of the learning capability could manifest the mediator role of learning capability between knowledge management and performance. It could be also considered the moderating effect of knowledge management on the relationship between learning flows, knowledge stocks and business performance.

Second, like most social science models, our model excludes some potentially important factors. We have only considered knowledge stocks as a general construct, but we could have differentiated between individual knowledge stocks, group knowledge stocks and organizational knowledge stocks. To prevent the analysis for being overwhelmingly complex, we did not include previous factors that might be enlightening of the effects of knowledge stocks on business performance.

Third, our study contributes to learning capability assessment by demonstrating that is possible to measure theoretical relevant constructs that are unobservable. But even when we have tried to define our constructs as precisely as possible by drawing on relevant literature, and to closely link our measures to their theoretical underpinnings, the measurement items used here can realistically be thought of as only proxies for an underlying and latent phenomenon that is neither fully nor easily measurable. In this sense, although the measure of organizational stocks as a construct of knowledge stocks performed satisfactory, its reliability was above 0.6 but below 0.7. Moreover, the adjusted measurement model uses only three perceptual items to evaluate non-financial performance and financial performance. While this is considered adequate for confirmatory factor analysis using LISREL, the use of additional and objective items might help capture the rich constructs to a greater extent. Future research should then keep on the search and validation of a superior measure of learning capability.

Another limitation comes from single informants used as the source of information. Respondents were Human Resource Managers and, on default, CEOs. Although the use of these single informants remains the primary research design in most studies, multiple informants would enhance the validity of the research findings. While one can expect these managers to have a great deal of knowledge about the topics being evaluated, their outlook could be excessively narrow or even inclined to overrate what reality is. Replies from multiple respondents and the obtaining of objective data—especially outcome measures—would have significantly enhanced the present research.

Finally, in this paper business performance was the organizational outcome and, hence, a dependent variable. But future research should attempt to assess the degree in which business performance provides important feedback about the efficiency of learning capability and,

ultimately, enables future learning capability. The purpose should be to test the existence of a retroactive effect that ties learning capability and performance in a continuous loop. Research on this issue may require a longitudinal approach by noticing the evolution of learning capability and business performance over time. Longitudinal data should also instigate a more exhaustive study of the relationship between learning capability and superior performance over time, and specially, an analysis of the relationship between financial performance and non-financial performance. This is especially true since some of the effects included on the model seem to take time to occur. This study could not assess the nature of such time lags, due to its cross sectional nature.



TABLES AND GRAPHAS

Figure 1. A model linking the learning capacity and business performance

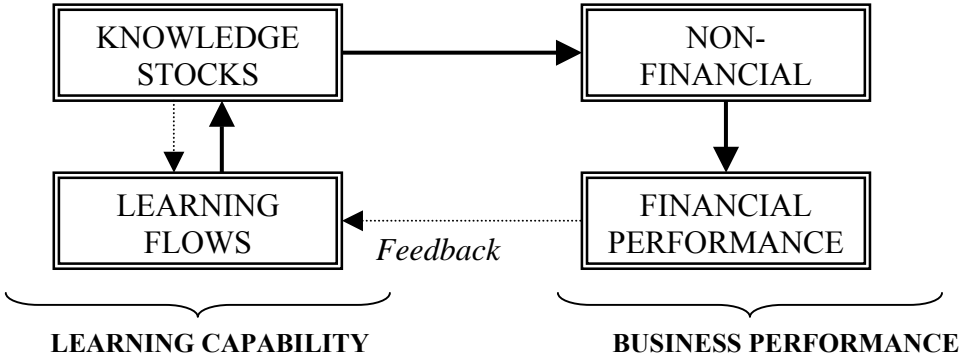
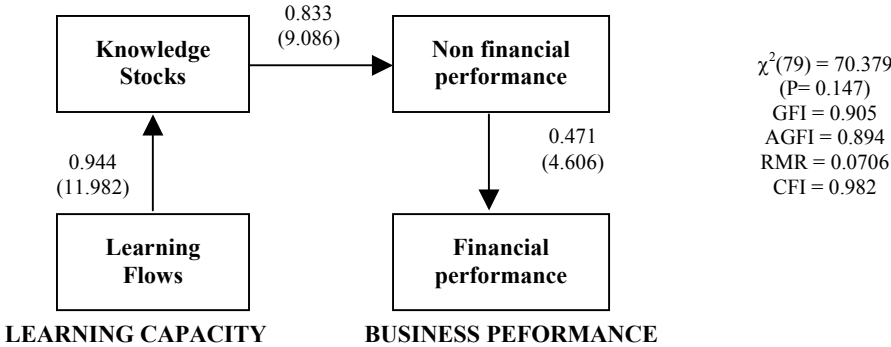


Figure 2. Structural equation model



**Table 1. Respondent characteristics**

INDUSTRY TYPE	N° responses	% Over each industry sample	% Over the total sample
Manufacturing (chemistry, petroleum and others)	15	9,09%	13,39%
Miner	4	8,16%	3,57%
<b>Total industry activity</b>	<b>19</b>	<b>8,88%</b>	<b>16,96%</b>
Transport, communications and public services	5	2,77%	4,46%
Services	59	16,66%	52,67%
Financing and insurance	28	9,39%	25%
<b>Total service activity</b>	<b>92</b>	<b>10,93%</b>	<b>83,21%</b>
<b>TOTAL</b>	<b>111</b>	<b>10,52%</b>	<b>100%</b>
<b>NUMBER OF EMPLOYEES</b>			
<50	8	5,5%	7,2%
50 a ≤100	15	19,26%	13,51%
100 a ≤ 250	45	34,86%	40,54%
250 a ≤ 500	16	15,59%	14,41%
500 a ≤ 1000	14	12,84%	12,61%
≥1000	13	11,92%	11,71%
<b>TOTAL</b>	<b>111</b>		<b>100%</b>

**Table 2. Variables Definition and Sample Survey Items**

Section	Variable	Item	Description
LEARNING CAPABILITY	Knowledge stocks	Individual-level knowledge	V1 Individuals are knowledgeable and qualified about their work
			V2 Individuals are competent to develop their work
			V3 Individuals are aware of critical issues that affect their work
			V4 Individuals felt confident about doing their work
			V5 Individuals feel a sense of pride and responsibility in their work
		Group-level knowledge	V6 Groups develop of a common knowledge about their work
			V7 Groups have capability to think and rethink decisions concerning work
			V8 Groups have capability for effective conflict resolution
			V9 Groups properly coordinate and organize their work
			V10 Successes and failures are shared within the groups
	Organizational-level knowledge	V11 Organization create a strategy that positions well its future	
		V12 Organizational structure allows to work effectively	
		V13 Organization has management methods to work efficiently	
		V14 Organization has systems and documents with key information	
		V15 Organization's culture is properly distinctive	
	Learning flows	Exploration	V16 Individual's lessons learnt are actively shared within groups
			V17 Individuals share knowledge into their work group
			V18 Individuals have input into the organization's decisions
			V19 Recommendations by groups/ individuals are adopted by the organization
			V20 Organization do not "reinvent the wheel"
Exploitation		V21 Policies and procedures aid individual work	
		V22 Internal training/competence development is essential in organization	
		V23 Interdisciplinary training, work rotation and special assignments are usual	
		V24 Group decisions are supported by individuals	
		V25 Past learned experiences provide input to future behaviour	
BUSINESS PERFORMANCE	Non financial performance	V26 Customers' satisfaction	
		V27 Growth of number of customers	
		V28 Employees' satisfaction	
		V29 Quality in products and services	
		V30 Organizational reputation	
	V31 Return on assets		

	Financial performance	V32 Sales growth V33 Profitability V34 Improvement in work productivity V35 Improvement in production cost
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Table 3. Results of reliability and validity for the measures

Paths	Standardized loadings	t-values	Goodness of fit indices	Reliability (Cronbach $\alpha$ )	Constructs correlation
<i>First order</i>					
V1←individual stock	0.670	7.124	$\chi^2 = 35.376$ (P= 0.312) GFI = 0.940 AGFI = 0.896 RMR = 0.0510 CFI = 0.990	0.757	$\phi_G = 0.597$ (6.897)
V2←individual stock	0.822	9.022			
V3←individual stock	0.707	7.579			
V6←group stock	0.616	6.664		0.782	$\phi_O = 0.513$ (4.785)
V7←group stock	0.826	9.818			
V8←group stock	0.711	8.015			
V9←group stock	0.614	6.648		0.660	$\phi_{GO} = 0.873$ (12.725)
V11←organizational stock	0.532	5.346			
V13←organizational stock	0.745	7.728			
V15←organizational stock	0.586	5.991			
<i>First order</i>					
V16←exploration flows	0.662	7.060	$\chi^2 = 21.391$ (P= 0.316) GFI = 0.952 AGFI = 0.909 RMR = 0.0472 CFI = 0.990	0.775	$\phi = 0.867$ (13.589)
V19←exploration flows	0.753	8.321			
V20←exploration flows	0.798	8.976			
V21←exploitation flows	0.607	6.199			
V22←exploitation flows	0.641	6.613		0.714	
V23←exploitation flows	0.549	5.504			
V24←exploitation flows	0.584	5.917			
V25←exploitation flows	0.530	5.278			
<i>First order</i>					
V26←not financial performance	0.595	5.808	$\chi^2 = 7.553$ (P= 0.478) GFI = 0.978 AGFI = 0.941 RMR = 0.0211 CFI = 1.000	0.722	$\phi = 0.486$ (5.105)
V28← not financial performance	0.665	6.520			
V30← not financial performance	0.801	7.833			
V31← financial performance	0.853	10.536			
V32← financial performance	0.803	9.669			
V33← financial performance	0.929	11.997	0.895		
<i>Second order</i>					
individual stock←knowledge stocks	0.461		$\chi^2 = 2.752$ (P= 0.431) GFI = 0.990 AGFI = 0.952 RMR = 0.0169 CFI = 1.000	0.747	
group stock← knowledge stocks	0.712				
organization stock← knowledge stock	0.859			0.797	
exploration flows←learning flows	0.888				
exploitation flows←learning flows	0.748				
learning flows←learning capacity	0.951				
knowledge stocks←learning capacity	0.997				

## REFERENCES

- Amin, A. and Cohendet, P. (2004). *Architectures of Knowledge. Firms, Capabilities and Communities*. Oxford University Press.
- Anderson, E.W., Fornell, C. & Lehman, D.R. (1994). "Customer Satisfaction, Market Share, and Profitability: Findings from Sweden". *Journal of Marketing*, 58, July.
- Anderson, E.W. and Fornell, C. (2000). "Foundations of the American Customer Satisfaction Index". *Total Quality Management*, 11 (6): 869-882.
- Anderson, J.C. and Gerbing, D.W. (1988). "Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach". *Psychological Bulletin*, 13 (3): 411-423.
- Andreu Bençh, M. and Solé Parellada, F. (2001). "The Actual State of Knowledge management in Spain: Utilization Profiles and Field for Improvement". Universitat de Barcelona.
- Appleyard, M. (1996). "How Does Knowledge Flow?. Interfirm Patterns in the Semiconductor Industry". *Strategic Management Journal*, 17: 137-154.
- Argote, L. and Ingram, P. (2000). "Knowledge Transfer: A Basis for Competitive Advantage in Firms". *Organizational Behaviour and Human Decision Processes*, 82 (1): 150-169.
- Bierley, P. and Chakrabarti, A. (1996). "Generic Knowledge Strategies in the U.S. Pharmaceutical Industry". *Strategic Management Journal*, 17 (winter special issue): 123-135.
- Blacker, F. (1995). "Knowledge, Knowledge Work and Organizations: An Overview and Interpretation". *Organization Studies*, 16 (6): 1021-1046.
- Bontis, N., Crossan, M. and Hulland, J. (2002). "Managing an Organizational Learning System by Aligning Stocks and Flows". *Journal of Management Studies*, 39 (4): 437-470.
- Calantone, R.J., Cavusgil, S.T. and Zhao, Y. (2002). "Learning orientation, Firm Innovation Capability, and Firm Performance". *Industrial Marketing Management*, 31: 515-524.
- Cangelosi, V.E. and Dill, W.R. (1965). "Organizational Learning Observations: Toward a Theory". *Administrative Science Quarterly*, 10: 175-203.
- Capon, N., Farley, J.U. and Hoening, S. (1990). "Determinants of Financial Performance: A Meta Analysis". *Management Science*, 26: 1143-1159.
- Castaneda, L.W. (2000). "Intrafirm Knowledge Transfer: a Review and Assessment of Current Research". *Presentation at the Annual Academy of Management Meeting in Toronto*.
- Cecez -Kecmanovic, D. (2004). "A Sensemaking Mode of Knowledge in Organizations: A Way of Understanding Knowledge Management and the Role of Information Technologies". *Knowledge Management Research & Practice*, 2: 155-168.
- Choi, B. and Lee, H. (2003). "An Empirical Investigation of Knowledge Management Styles and their Effect on Corporate Performance". *Information & Management*, 40: 403-417.
- Choo, C.W. and Bontis, N. (2003). *The Strategic Management of Intellectual Capital and Organizational Knowledge*. Oxford University Press.

Chuang, S. (2004). "A Resource-Based Perspective on Knowledge Management Capability and Competitive Advantage: An Empirical Investigation". *Expert Systems with Applications*, 27: 459-465.

Coakes, E., Bradburn, A. and Sudgen, G. (2004). "Managing and Leveraging Knowledge for Organisational Advantage". *Knowledge Management Research & Practice*, 2: 118-128.

Cook, S. and Brown, J.S. (1999). "Bridging Epistemologies: The Generative Dance Between Organizational Knowledge and Organizational Knowing". *Organization Science*, 10: 381-400.

Crossan, M., Lane, H.W., White, R.E. and Djurfeldt, L. (1995). "Organizational Learning: Dimensions for a Theory". *The International Journal of Organizational Analysis*, 3 (4): 337-360.

Crossan, M.M., Lane, H.W. and White, R.E. (1999). "An Organizational Learning Framework: from Intuition to Institution". *Academy of Management Review*, 24 (3): 522-537.

Decarolis, D.M. and Deeds, D.L. (1999). "The Impact of Stock and Flows of Organizational Knowledge on Firm Performance: an Empirical Investigation of the Biotechnology Industry". *Strategic Management Journal*, 20: 953-968.

Dierickx, I. and Cool, K. (1989). "Assets Stocks Accumulation and Sustainability of Competitive Advantage". *Management Science*, 35: 1504-1511.

Dragonetti, N.C. and Roos, G. (1998). "La Evaluación de Ausindustry y el Business Network Programme: una Perspectiva desde el Capital Intelectual". *Boletín de Estudios Económicos*, 53 (164): 265-280.

Edvinsson, L. and Malone, T. (1997). *Intellectual Capital: Realising your Company's True Value by Finding its Hidden Brainpower*. Harper Business, New York.

EFQM (2001). "The EFQM Excellence Model". [www.efqm.org/imodel/modelintro](http://www.efqm.org/imodel/modelintro).

Elkjaer, B. (1991). "The Learning Organization: An Undelivered Promise". *Management Learning*, 32 (4): 437-452.

Ellinger, A. D., Ellinger, A. E., Yang, B. and Howton, S.W. (2002). "The Relationship Between the Learning Organization Concept and Firm's Financial Performance". *Human Resource Development Quarterly*, 13 (1): 5-21.

Gardiner, P. and Leat, M. (2001). "Learning in Organizations: HR Implications and Considerations". *Human Resources Development International*, 4 (3): 391-405.

Goh, S.C. and Ryan, P.J. (2002). "Learning Capability, Organizational Factors and Firm Performance". Presentation for the *Third European Conference on Organizational Knowledge, Learning and Capabilities*, Athens, Greece, April 5-6.

Grant, R. (1996). "Toward a Knowledge-Based Theory of the Firm". *Strategic Management Journal*, 17 (Winter special Issue): 199-122.

Huber, G.P. (1991). "Organizational Learning: the Contributing Processes and the Literatures". *Organization Science*, 2 (1), February: 88-115.

Johansson, U., Eklöv, G., Holmgren, M. and Martesson, M. (1998). "Human Resource Costing and Accounting versus the Balanced Scorecard". School of Business. Stockholm University.

Kaplan, R.S. and Norton, D.P. (1992). "The Balance Scorecard-Measures that Drive Performance". *Harvard Business Review*, 70 (1), January/February: 71-79.

Kaplan, R.S. and Norton, D.P. (1996). *The Balanced Scorecard*, Harvard Business School Press, Boston.

Kennerley, M. and Neely, A. D. (2000). "Performance Measurement Frameworks – A Review. In: Performance Measurement-Past, Present, Future". Conference proceedings, edited by A.D. Neely. July 2000, Cambridge.

March, J.G. (1991). "Exploration and Exploitation in Organizational Learning". *Organization Science*, 2 (1), February: 71-87.

Martin, J.M. (2000). "Approaches to the measurement of the Impact of Knowledge Management Programs". *Journal of Information Science*, 26 (1): 21-27.

Marr, B. and Schiuma, G. (2001). "Defining Key Performance Indicators for Organisational Knowledge Assets". Second European Conference on Knowledge Management. November 2001, Bled, Slovenia.

Minzberg, H., Quinn, J.B. and Voyer, J. (1995). "The Strategy Process". Englewood Cliffs: NJ Prentice-Hall.

Neely, A. and Adams, C. (2001). "Perspectives on Performance: The Performance Prism". <http://www.som.cranfield.ac.uk/som/cbp/prismarticle.pdf>.

Nonaka, I. and Takeuchi, H. (1995). *The Knowledge Creating Company*. Oxford University Press, New York.

Nonaka, I. and Toyama, H. (2003). "The Knowledge-Creating Theory revisited: Knowledge Creation as a Synthesizing process". *Knowledge Management Research & Practice*, 1: 2-10.

Prieto, I. (2003). *Una Valoración de la Gestión del Conocimiento para el Desarrollo de la Capacidad de Aprendizaje en las Organizaciones: Propuesta de un Modelo Integrador*. Tesis Doctoral. Departamento de Economía y Administración de Empresas, Universidad de Valladolid.

Prieto, I. and Revilla, E. (2004). "Learning capacity and business performance: a measurement and research". En Neely, A., Kennerley, M. and Walters A. (eds.): *Performance Measurement and Management: Public and Private*. Cranfield University, UK. Pp. 603-610.

Saint-Onge, H. (2002). <http://www.knowinc.com/saint-onge>

Sanchez, R. (2001). *Knowledge Management and Organizational Competence*. New York, Oxford University Press.

Seibert, S.E., Kraimer, M.L. and Liden, R.C. (2001). "A Social Capital Theory of Career Success". *Academy of Management Journal*, 44 (4): 219-237.

Senge, P. (1990). *The Fifth Discipline*. Doubleday, New York.

Slater, S. F. and Narver, J.C. (1995). "Market Orientation and the Learning Organization". *Journal of Marketing*, 59, July: 63-74.

Soo, C.W., Devinney, T.M. and Midgley, D.F. (2004). "The Role of Knowledge Quality in Firm Performance". In Tsoukas, H. and Mylonopoulos, N. (eds.), *Organizations as Knowledge Systems. Knowledge, Learning and Dynamic Capabilities*. Palgrave Macmillan.

Spender, J.-C. (1996). "Making Knowledge the Basis of a Dynamic Theory of the Firm". *Strategic Management Journal*, 17 (winter special issue): 45-62.

Stewart, T.A. (1997). *Intellectual Capital. The New Wealth of Organizations*. Currency Doubleday.

Teece, D.J., Pisano, G. and Shuen, A. (1997). "Dynamic Capabilities and Strategic Management". *Strategic Management Journal*, 17 (Winter Special Issue): 509-533.

Tippins, M. J. and Sohi, R. S. (2003). "IT Competency and Firm Performance: Is Organizational Learning a Missing Link?". *Strategic Management Journal*, 24 (8): 745-761.

Vekstein, D. (1998). "Managing Knowledge and Corporate Performance: An Empirical Analysis of the World Automobile Industry". *Omega*, 26 (5): 551-568.

Vera, D. and Crossan, M. (2003). "Organizational Learning and Knowledge Management: Toward an Integrative Framework". In M. Easterby-Smith and M. Lyles (eds.) (2003): *Handbook of Organizational Learning and Knowledge Management*. Oxford: Blackwell: 123-141.

Wiklund, J. and Shepherd, D. (2003). "Knowledge-Based Resources, Entrepreneurial orientation, and the Performance of Small and Medium-Sized Businesses". *Strategic Management Journal*, 24: 1307-1314.

## NOTAS

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