

# The Effect of Organizational Learning Tools in Business Results

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## Abstract.

The importance of the tools that facilitate organizational learning has traditionally been outlined in the literature. Information Technologies (ITs) are considered as common facilitating tools for all learning agents by researchers and practitioners. Our study focuses on the question what ITs are essential for organizational learning and how they actively contribute to the business results (operative and financial). The results exhibit that the use of databases generates larger sales volumes and better operative results. Companies with low profits tend to use Internet more often and this use improves operative results. Also the use of the electronic mail increases the sales volume.

**Keywords:** Organizational learning; tools; information technologies; internet; intranet; database; financial and operative results; competitive advantage.

## 1 Introduction

Today we live in what is clearly manifesting as an ever increasing knowledge society. Learning is the key factor that distinguishes the knowledge society from the information society. In this emerging global, multicultural and networked world, information technologies will become natural extensions to people cognition.

Organizational learning is “the capacity to drive a process that transforms the information in knowledge. This process is generated by different agents: organization, groups and individuals. It is affected by a set of factors related to the agents and the organizational context, and facilitated by series of tools”. It improves the managerial activity, its performance, and therefore its source of competitive advantages.

The direct result of organizational learning is knowledge, which is “information combined with experience, context, interpretation, and reflection”. Knowledge is an intangible resource, one of the most important strategic assets in organizations and a vital source of competitive advantage (Spender and Grant, 1996). Consequently, an extensive body of research in organizational learning has focused on identifying the facilitating tools that create knowledge and enhance business performance.

In this context, our paper identifies the main organizational learning tools (OLT), empirically exploring actual OLT use and analysis the significant influence of OLT on financial and operative results of the firms.

## 2 Conceptual Background

The facilitating learning tools help to appropriately develop the learning process in the company, independently of their agents (individual, group and organization). ITs are considered as the most important common tools used by the firms in the organizational learning process and knowledge management (Nonaka et al., 2001).

### 2.1. The information technologies.

IT is the capability to electronically input, process, store, output, transmit, and receive data and information, including text, graphics, sound, and video, as well as the ability to control machines of all kinds electronically. Consequently, IT allows: a) the efficient generation, accumulation, dissemination, utilization, and protection of information (Davenport et al., 1998; Ruggles, 1998; Nonaka et al., 2001); b) the improvement and easiness to code, to assimilate and to store information; c) the efficiently and effectively management of knowledge (Nonaka et al., 2001); d) the enhancement of the communication and collaboration (McCampbell *et al.*, 1999); e) the encouragement to share the best practices between departments and employees (Frappaolo and Capshaw, 1999) and f) the reinforcement of organizational memory (Croasdell, 2001).

There are multiple technological tools related to information appropriating and knowledge management, which facilitate the organizational learning. They are:

*Internet* allows the search and the exchange of data and information (Croasdell, 2001), and general and specific knowledge. These skills streamline learning processes because: a) to make easy the access to information, b) to increase the amount of information on individuals by automatically connecting different data, c) to facilitate the learning process, and d) to construct knowledge networks, because it has a high potential of the reciprocity.

The *corporate Intranet* is an intra-organizational network based on Internet technology (Harvey et al., 1998). If it is well structured, it supports the appropriating, connecting, disseminating, utilizing and protecting information (Ruggles, 1998; Nonaka et al., 2001). Accordingly, this tool sustains the creation of knowledge, facilitates exchange, distribution and deposit of the available organizational knowledge.

The *databases* are deposits of past data, information and knowledge, which permit the creation and maintenance of an organizational shared intelligence and memory (Ruggles, 1998; Croasdell, 2001). They also permit that organizations detect similar

pattern from previous contexts (Croasdell, 2001), adapt quickly to the changing opportunities and improve their organizational learning process. The use of database reporting has evolved from the defined reports done by the IT's department through the use of Business Intelligence applications.

The *electronic mail* facilitates the exchange of information between individuals or groups by off-line messages, which can contain documents, programs and texts. It allows the users to process and filter more information, which improve their professionalism and efficiency (Huber, 1991; Day, 1999). Also, it permits the learning among groups and organizations.

The *videoconference* permits the simultaneous dialogue through a virtual interaction among people (De Geus, 1997; Davenport et al., 1998), and the exchange of documents, files and shows. Their use facilitates the frequent exchange of information and the creation, diffusion and transfer of knowledge.

One step further, we can find the *groupware*. This software facilitates the remote communication, which make easy the work in dispersed work teams, and conducive to knowledge generation and transfer (Ruggles, 1998; Nonaka et al., 2001).

Finally, the *simuworld* develops techniques to anticipate what will happen in a future, starting from an initial situation. It improves the decision-making learning.

## **2.2. Variables of business performance**

Literature exhibits different opinions on what is understood by business performance. This multidimensional variable is reflected through financial and non financial assets.

The organizational learning produces changes in organizational behaviour which are not reflected directly in business performance. Consequently, a simple measure doesn't reflect their main results. For this reason, financial and operative results have been considered in this research.

The financial results have been measured using two variables, net profits and sales volume (Tippins and Sohi, 2003). The operative results are based on nonfinancial indicators, coming from Kaplan and Norton (1996) orientations and agrarian sector report recommendations, using a Likert scale type of 7 points.

## **2.3. Information technologies as organizational learning tools and its influence on business results.**

### *2.3.1. Information technology and its influence on business results.*

Theoretically, the use of ITs is a source of competitive advantages (Kettinger et al., 1994), but there are not any empirical evidence of ITs provides differential performance (value) over competitors (Carr, 2003 & 2004; Real et al., 2006). However, it is possible to confirm the indirect effect of ITs on performance, mediated by organizational learning (Real et al., 2006). Therefore, ITs have been considered as OLT.

This evidence requires a detailed analysis of the main ITs in the companies: Internet, database and electronic mail, and their contribution to organizational learning.

### *2.3.2. Organizational learning as a determinant of business results.*

Researchers tend to agree that organizational learning has a positive effect on performance and business results. In this sense, there is enough evidence to support a positive link between organizational learning and financial results (Slater and Narver, 1995; Tippins & Sohi, 2003; Pérez et al., 2004; Jimenez and Cegarra, 2007). So, authors, such as Bontis et al. (2002) and Real et al. (2006), declare organizational learning has a positive effect on operative results.

### *2.3.3. The influence of organizational learning tools on financial and operative results.*

This study considers ITs as OLT, because they capture, access, storage, revise and retrieve structured data, diagrams, models, text, and images. Consequently, OLT help to develop a set of competences and support organizational learning, which on generate a real value for financial (net profit and sales volume) and operative results.

However, the scientific concept of OLT and their influence on business results has not yet evolved, and there are not any confirmation of this relation. In contrast, we have verified that organizational learning has a positive effect on business results and ITs are not in themselves able to improve business results, but they has a indirect effect, mediated by organizational learning (Real et al., 2006). In agreement with the above, the following working hypotheses can be drawn up:

H1: organizational learning tools positively affect the net profit.

H2: organizational learning tools positively affect the sales volume.

H3: organizational learning tools positively affect operative results.

## **3. Methods**

### **3.1. Sample and procedures**

An empirical study was carried out on large Spanish agriculture firms, because large size is associated with mayor learning process. We chose companies with 1 Meuro of sales volume, which gave us an objective population of 173 firms. The data were collected via a personal survey to the general manager. One hundred and thirteen questionnaires were returned, of which all were considered valid, which represents a response rate of 65.3% and 5.56% sampling error for a confidence interval of 95%.

### **3.2. Scale development and validation**

Our scale development and refinement is based upon a Malhotra (1999) methodology, facilitated by a Delphi Methodology. The preliminary test was developed interviewing other managers from the same sector. Table 1 shows the definitive component of the OLT. This scale exhibits excellent reliability with estimate of .81.

**Table 1.** Definitive components of organizational learning' technological tools

<b>Technological Tool</b>	<b>Uses</b>
Is there Internet link?	It is used to obtain current clients' information.
	It is used to obtain potential clients' information.
	It is used to obtain suppliers' information.
	It is used to obtain information of sector associations.
Have the firm databases?	To plan of production
	To stock and storehouse management
	To commercial management
Has the firm electronic mail?	It is used to obtain current clients' information.
	It is used to obtain potential clients' information.
	It is used to obtain suppliers' information.
	It is used to obtain information of sector associations.

### **3.3. Formative measure of Organizational Learning Tools**

In the literature revised, a measurement of the OLT has not been detected. In our opinion, it is necessary the creation of a formative measurement that allows to measure clearly and simply the level of use of such instruments.

Use a formative model is justified because a OLT construct is composed by three proposed tools, which do not necessarily have to be correlated. So, companies can have different use' level of databases, but they not employ e-mail or internet for those purposes. It is also true that companies with high scores on the three tools will have learnt more than companies with high scores on only some of them. This is a logical statement, but it is not compatible with the reflective view because we can expect that if there are organizational learning differences between companies, this will be reflected in all the dimensions, not only in some of them. Finally, the dimensions of OLT are not interchangeable because if we disregard one of them, the meaning of the construct is clearly altered.

## **4. Contrasting the Theoretical Model**

In order to test the proposed hypotheses, we have estimated a formative measure of use of the OLT. Next, a one-factor ANOVA (Analysis of Variance) has been carried out for each one of the components and the different dependent variables (net profits, sales volume and operative results). Some applied ANOVA techniques on averaged data, drawing (mean) performance comparisons over firms at different levels or ranges of OLT.

To test the homogeneity of variances in the groups, the test of Levene was used. Since the variances are not equal, the test of Tamhane and Bonferroni were selected to see which mean values differ statistically from each other (SPSS, 1996, 1994). The results of these tests are shown in Table 3.

## 5. Results

Table 2 shows the descriptive information of use of OLT and its components. The agricultural firms use an average of 7.5 instruments of 11 uses considered. These results show us that the electronic mail is the tool less used (mean is of 2.5 on 4 included practices) compare to Internet (2.7 on 4) and database (2.3 on 3).

**Table 2.** Descriptive information about organizational learning tools and their components.

	<b>Index of organizational learning tools' use</b>	<b>Subindex of Internet' use</b>	<b>Subindex of database' use</b>	<b>Subindex of e-mail' use</b>
Items number	11	4	3	4
Arithmetic mean	7.5	2.7	2.3	2.5
Medium	7.6	2.9	2.4	2.4

Overall ANOVA results are reported in Table 3, which shows the proportion of variance of each independent variables (each subindex) explained by factor Net profit. The results of ANOVA analyses show that the use of Internet has a significantly influence in this factor, while the others not.

**Table 3.** ANOVA results to Factor Net Profit, Sales Volume and Operative Result.

<b>Net Profit</b>	<b>Internet' use</b>			<b>Database' use</b>			<b>E-mail' use</b>		
	Mean	N	Anova Test	Mean	N	Anova Test	Mean	N	Anova Test
1. High	2.04	25	(1)						
2. Intermediate	1.85	64							
3. Losses	2.32	19							
Inter-group Significant Results	<i>0.016<sup>b</sup></i>			<sup>c</sup> NS			<sup>c</sup> NS		
<b>Sales Volume</b>	<b>Internet' use</b>			<b>Database' use</b>			<b>E-mail' use</b>		
	Mean	N	Anova Test	Mean	N	Anova Test	Mean	N	Anova Test
1. High				2.14	22	(3)	2.65	32	(3)
2. Medium				2.53	53	(3)	2.34	38	(3)
3. Small				1.80	31	(1,2)	1.75	36	(1,2)
Inter-group Significant Results	<sup>c</sup> NS			<b>0.009<sup>a</sup></b>			<b>0.001<sup>b</sup></b>		
<b>Operative Results</b>	<b>Internet' use</b>			<b>Database' use</b>			<b>E-mail' use</b>		
	Mean	N	Anova Test	Mean	N	Anova Test	Mean	N	Anova Test
1. High	3.12	24	(2)	3.21	24	(3)			
2. Medium	2.56	62	(1)	2.69	55	(3)			
3. Small	2.39	18		2.14	28	(1,2)			
Inter-group Significant Results	<b>0.058<sup>a</sup></b>			<b>0.002<sup>b</sup></b>			<sup>c</sup> NS		

<sup>a</sup> Variance analysis using statistical Bonferroni; <sup>b</sup> Variance analysis using statistical Tamhane test. <sup>c</sup> NS: no significant.

Table 3 exhibits the existent relation between OLT and performance variables:

a) Net profit: the ANOVA analysis confirms significant differences among companies with intermediate benefits (1.85) compare to firms which get losses (2.32). Databases and electronic mail has not significant relationship with net profit. This shows the general hypothesis is partially accepted.

b) Sales volume: the hypothesis 2 is partially accepted, because the databases and the electronic mail have a positive influence in the sales volume while the Internet use has not a significant relationship with the financial result. So, we can conclude that those organizations with high databases and electronic mail uses get great sales volumes.

c) Operative results: the hypothesis 3 is partially accepted, because the Internet and databases use have a positive influence in the firms' operative results. The electronic mail use has not any significant relationship in this variable. Thus, we can conclude that those organizations with high Internet and databases uses get better operative results.

## 6. Discussion

The essential purpose of this study is to test empirically the relationship between OLT and their effect on business performance. The findings in this study indicate that the grade of use of the OLT is close to 68% of the considered ITs. Database is broadly used in the firm's. Internet is not so important in our study, due to a) the construction and design of a Web site is a big step for these agricultural companies, b) the production companies are less interesting in image projection than commercial firms (Beranger et al., 2001); and c) production centres' (farms) are dispersed geographically, where internet access and other technological infrastructure could be expensive. However, electronic mail is proportionally less used, due to middle field manager are not technical skilled.

This study tries to find support for the association of OLT and business results (financial and operative) in the companies. Surprisingly, we have obtained empirical evidence that the organizations with larger use of Internet get fewer net profits. We identify larger companies as firm profile that uses Internet, because a) they have an important area of influence; b) its production centres are dispersed geographically, c) the increasing customer requirements' force to use this tool, and d) its has sufficient human and economic resources to efficiently implant and use this tool.

Internet has not got any significant influence on sales volume. However, this tool has a significant influence on operative result, as we proposed in the hypothesis.

The companies with higher use of databases obtain great sales volumes and operative results. As we explained before, databases provide information and knowledge about the product, market and customers' necessities, which allow improving the product design and adapting continuously the company to the turbulent environment.

Finally, the study states that the use of the electronic mail has a more positive impact on the sales volume. Contrary to expectation, electronic mail has not got any significant impact on net profit and operative results. This situation is inconsistent with our predictions and even opposite to the literature.

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