
# MASTER IN
# CORPORATE SCIENCES

## MASTER FINAL WORK
DISSERTATION

# THE IMPORTANCE OF MANAGERIAL COMMITMENT TO PROMOTE KNOWLEDGE TRANSFER
Energy Industry case study

SÓNIA FILIPA MANJUA HENRIQUE PIRES PEREIRA

OCTOBER, 2017

LISBON SCHOOL OF ECONOMICS & MANAGEMENT
UNIVERSIDADE DE LISBOA

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# ABSTRACT

Many organizations seek to become learning organizations, but before the implementation, a learning culture needs to be secured. Organizational learning has become an increasingly important area and from a strategic point of view it could be considered a competitive advantage.

The present study aims to establish the ultimate reliability and validity of a measurement scale for organizational learning capability proposed by (Gómez, et al., 2003), using a different industry and nation. Therefore, a quantitative methodology was herein adopted and a descriptive survey (Appendix 2) was conducted to the employees of a Portuguese Energy Company: 35 surveys were distributed and 25 were returned and analyzed. Organizational Learning was measured in 4 dimensions: managerial commitment; systems perspective; openness and experimentation; knowledge transfer and integration. Additionally, as suggested by the authors of (Gómez, et al., 2003), the distrust scale was introduced in order to complement the proposed measurement scale.

Through the survey results (Appendix 3) it is possible to conclude that managerial commitment and systems perspective have a positive impact on knowledge transfer and integration. On the contrary, distrust among the employees has a negative effect on knowledge transfer and thus it is harmful for the company performance. It would be valuable to apply this measurement scale to other industries and countries to enhance the validity of the conclusions presented in this study.

**Keywords**: Knowledge Transfer; Managerial commitment; Organizational learning; Strategic capability; Energy sector; Portugal.

# RESUMO

São muitas as organizações que procuram tornar-se "learning organizations". No entanto, antes da implementação do conceito é necessário previamente garantir uma cultura de aprendizagem. A aprendizagem organizacional tem-se tornado uma área cada vez mais importante e, de um ponto de vista estratégico, pode ser considerada como uma vantagem competitiva.

O presente estudo pretende verificar a confiabilidade e validade de uma escala de medição da aprendizagem organizacional proposta por Gómez, *et al.* (2003), utilizando para tal uma indústria e um país diferentes do que foi previamente estudado. Assim, foi adotada uma metodologia quantitativa e foi aplicado um questionário aos funcionários de uma empresa portuguesa inserida no sector de energia: 35 questionários foram distribuídos e 25 foram preenchidos e posteriormente analisados. O conceito de aprendizagem organizacional foi analisado através de 4 dimensões: comprometimento da gestão; perspetiva de sistemas; abertura e experimentação; transferência de conhecimento e integração. Adicionalmente, e como sugerido por Gómez, *et al*. (2003), introduziu-se a escala de desconfiança de forma a complementar a escala de medição originalmente proposta.

Através dos resultados obtidos, é possível concluir que o comprometimento da gestão e a perspetiva dos sistemas têm um impacto positivo na transferência e integração do conhecimento. Contrariamente, a desconfiança entre os funcionários tem um efeito negativo na transferência de conhecimento e, portanto, prejudica o desempenho da empresa. Seria vantajoso no futuro aplicar esta escala de medição a outras indústrias e países de forma a aumentar a validade das conclusões apresentadas neste estudo.

**Palavras-chave**: Transferência de conhecimento; Comprometimento da gestão; Aprendizagem organizacional; Competência estratégica; Sector energético, Portugal.

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All the things in life are achievable through hard work and persistence. This master thesis is another personal milestone and a result of my own effort, focus and motivation to continuously learn and improve my capabilities. This achievement was only possible due to the support and encouragement of my family, friends and teachers from ISEG, Lisbon School of Economics & Management.

A special acknowledgement to my supervisor PhD Paulo Lopes Henriques for all the time spent, meetings and suggestions made. Thanks for having challenged me to do something not related with my previous background. It was really interesting to learn something valuable for my future career.

To my family, a lovely acknowledgement for always believing in my skills, for never giving up on me in this battle and to be proud of my achievements. I'm pretty sure that life has more for me, and I just need to continue working hard and believing that I can achieve all I want in due time. The main trigger is and will always be internal strength and positive thinking.

*"Optimism is the faith that leads to achievement.*

*Nothing can be done without hope and confidence."*

*Helen Keller*

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# 1. INTRODUCTION

Today organizations are acting in a complicated and changing environment and they are not able to predict the future (Rezaie & Bagheri, 2014). The globalization trend means that companies increasingly require an internal environment that encourages the creation and application of new knowledge (López & Gómez, 2008). Better and faster learning is considered as the only resource for power and survival, since learning is the main critical factor for organizations which pretend to succeed in the current environment (Rezaie & Bagheri, 2014). Thus, most executives recognize the importance of effective learning, broader empowerment and greater commitment from everyone in the company (Argyris, 1994).

Organizational learning has become an increasingly important area to scientific investigation (Gómez, et al., 2003; Spector & Davidsen, 2006), and it is considered a strategic advantage in the current market (Gómez, et al., 2003). Therefore, information created through learning is considered a strategic input, helping organizations to become one step ahead of their competitors (Atak & Erturgut, 2010). Furthermore, organizational learning is particularly important in today' workplace, where employees may frequently change jobs or hide what they know, as they think that sharing knowledge is detrimental to own success (Marsick & Watkins, 2003).

Problems related with the assessment of learning progress are difficult to resolve, but at the same time, they are critical and vital to succeed and progress (Spector & Davidsen, 2006). To become a learning organization, where organizational learning truly occur, a company can start by taking a few simple steps (Garvin, 1993). Additionally, to achieve continuous learning, organizational variables and managerial purpose are essential for access to superior knowledge assets (López & Gómez, 2008).

## 1.1. Objectives and importance of the subject

Considering the high importance of organizational learning and the issues discussed in various studies, the present work attempts to define the main dimensions associated with the organizational learning concept. Additionally, it intends to provide guidelines to improve it.

Before starting to promote a learning culture, it is important to assess the current company's status. Thus, the main objective of this thesis is to contribute to the validation of the measurement scale for Organizational Learning capability proposed by (Gómez, et al., 2003). As suggested by these authors, it should be applied to other national and industrial contexts in order to establish its ultimate reliability and validity test. As such, it will be studied in four dimensions originally identified by the literature: managerial commitment; systems perspective; openness and experimentation; knowledge transfer and integration. Additionally and aiming to complement the proposed measurement scale, a trust scale will be added as another learning dimension, which was also proposed by the authors as an empirical question to be examined later.

It is also the purpose of this study to reinforce the importance of organizations to hold individuals accountable for their continuous learning and, at the same time, for building the organization's capacity to support, encourage, and make use of that learning. Moreover, this study mainly aims to show the benefits for companies that invest in and that reward learning.

This work has been divided into several sections. The first section of this study presents a literature review. It starts with a brief definition of the organizational learning concept, the main definitions proposed for it by the literature and some relevant related information, in order to offer a deeper understanding of this complex concept. This section also presents the research model that will be followed in this study.

Following the literature review, the second section focuses on the methodology and analysis performed, highlighting the instrument proposed by the literature review and also the data treatment process. This study uses a quantitative methodology and a survey will be distributed in order to validate the hypotheses defined.

Subsequently, this study will be finalized with the presentation and discussion of the main findings obtained and their applicability.

Finally, the relevant conclusions from this study will be presented in the last chapter, along with the limitations of the study and recommended directions for future research.

# 2. LITERATURE REVIEW

This section starts with a discussion of organizational learning concept, followed by the analysis of the main dimensions of organizational learning (Gómez, et al., 2003). Finally, the research model concept will be set.

The concept of organizational learning capability has been gaining increased importance over recent years (Guinot, et al., 2015) among academics seeking to improve organizations (Robey, et al., 2000). It is essential to better understand the antecedents of learning processes among individuals, teams, and organizations as a whole (Chadwick & Raver, 2015) and how to manage it (Hooff & Huysman, 2009), as knowledge is a key organizational resource to successfully compete in a global market (Gómez, et al., 2003).

## 2.1. Importance of Learning within organizations

The developing of new competencies and capabilities has gained importance, as learning is at the center of organizations (Rijal, 2010). Organizations must learn, adapt (Chadwick & Raver, 2015), be flexible and be innovative (Rijal, 2010) to succeed in today's ever-changing and competitive business environment (Gómez, et al., 2003). Compared with the past, the current business environment is more competitive and uncertain. Thus, current organizations must create new knowledge, products and services rapidly (Yang, 2007).

In this sense, traditional sources of competitive advantage (protected markets, physical, financial, or even technological assets) were relegated to a back seat position; knowledge became the most valuable asset that any organization can generate (López & Gómez, 2008). Leaders believe that to stay competitive, employees must learn and improve daily (Gino & Staats, 2015) as knowledge creation, diffusion and application form the basis of competitiveness (López & Gómez, 2008). Additionally, the level of learning is related with ability to produce competitive responses and obtain major competitive advantages (Yang, 2007).

The starting point is that companies must resolve the basic learning dilemma: success increasingly depends on learning but people do not know how to learn (Argyris, 1991). Also, leaders have difficulties in transforming their organization into learning organizations (Atak & Erturgut, 2010). Aligned with that, even

leaders across organizations may say that learning comes from failure, but their actions show a preoccupation with success (Gino & Staats, 2015).

The current dynamic environment (Stelmaszczyk, 2016) encourages an organization to become proactive and embrace change, using it as a creative way to advance the organization's vision, mission and goals (Lick, 2006). Organizational learning facilitates the response to changes and helps organizations to survive and compete effectively in the context of global economic crisis (Stelmaszczyk, 2016), promoting the development of competencies that are valued by the clients and hardly imitable (Curado, 2006).

Learning and knowledge has grown in competitive value (Ferincz, 2016), and a strong learning orientation is required to gain sustainable competitive advantage (Calantone, et al., 2001; Curado, 2006; Ferincz, 2016). The development of knowledge, skill and continuous learning, facilitated by the learning orientation (Calantone, et al., 2001), involves the mobilization of all organizational workforce, managers and workers alike (Casey, 2013). Furthermore, to become a learning organizational, organizations must also create employees commitment, meaning that employees should adopt aims, goals and values of their own organization and having faith on these (Atak & Erturgut, 2010).

Under a rapidly changing, competitive and turbulent environment, a strong organizational culture to promote risk-taking, creativity and innovation also plays a key role in the organization's long-term survival (Rijal, 2010). Innovation is a major element that enhances firms' sustainability and success in today's competitive environment (Onag, et al., 2014). Also, there is a relationship between organization learning capability and innovation performance: a company's capability to learn, by which new knowledge is developed, distributed and implemented, enhances innovation performance, allowing the finding of new ways to solve problems (Alegre & Chiva, 2008).

Because of day-to-day concerns, organizations often neglect activities pertaining to learning (Berson, et al., 2015). However, an organization is a context that should encourage the emergence, development and application of knowledge (López & Gómez, 2008). Knowledge, as an organization's intellectual capital (Hooff & Huysman, 2009), is a significant organizational source of sustainable competitive advantage (Alavi &

Leidner, 2001; Gómez, et al., 2003) over time if it is continuously developed: organizations need to be able to create, innovate and assimilate new knowledge in order to do things differently (López & Gómez, 2008). In this sense, some organizations systematically seek to capture and embed new learning in a manner that facilitates its extensive dissemination for current and future employees (Marsick & Watkins, 2003).

Aligned with the above-mentioned, learning organizations have been hailed as a leader in improving employees' learning and development through the application of continuous learning techniques (Rouhana & Chams, 2013). By encouraging a learning environment, organizations will be able to build the capabilities required to continue innovating over time, under a complex and dynamic process based on the organizations' characteristics, in order to achieve and retain a competitive business position (Shipton, et al., 2013). Another factor that should be encouraged is the employee's commitment. Organizations commitment by itself works as a way to reduce employees' turnover and preventives the interruption of continuous learning cycle (Atak & Erturgut, 2010).

The ability to create new organizational ways and processes, to innovate in both the technical and organizational arenas, is mandatory to remain competitive (Schein, 1996). Furthermore, Company's innovativeness is also considered the key aspect to achieve long term goals and objectives (Onag, et al., 2014). Aiming that the improvement, it is required to adopt and diffuse the organizational learning to other relevant organization's departments and to other organizations in a given industry (Schein, 1996). Unfortunately, organization have still not learned how to manage that process (Schein, 1996). The management of knowledge sharing is difficult, since social group interactions are what primarily stimulate this sharing (Hooff & Huysman, 2009), reinforcing the importance to continue empirical studies on this area.

## 2.2. Organizational Learning

Organizational learning is usually associated with improvement in performance but the connection between learning and performance is still an issue to be determined (Tsang, 1997). Some authors advocated that learning organizations have better performance than their less learning-focused rivals (Santos & Trespalacios,

2011; Shipton, et al., 2013; Rezaie & Bagheri, 2014) and learning environments support greater organizational effectiveness (Tannenbaum, 1997). Furthermore, the staff of learning organizations are more flexible than less learning-oriented ones and probably better at anticipating performance challenges and more skilled to avoid any financial damages (Shipton, et al., 2013). On the other hand, some authors still defend that learning usually, although not always, increases organization's capacity to outperform competitors: an organization that corrects its errors quickly and reacts faster to environmental change should, on average, outperform other that rarely learns from the past (Tsang, 1997).

In spite of all this, it is clear that continuous improvement requires a commitment to learn, because in the absence of learning companies and their employees simply repeat old practices (Garvin, 1993). Furthermore, lessons learned, if properly stored in the organizational memory, are an important source of knowledge for all current and future organization's members (Tsang, 1997).

*a) Concept*

Organizational learning capability is by its nature, complex and multidimensional (Gómez, et al., 2003; Tsang, 1997), and due to the difficulty in investigating this concept, no unified definition of it has been achieved by scholars so far (Ferincz, 2016). Due to the diverse origin and complexity of all these definitions, it is unlikely that a uniform understanding of organizational learning will ever be widely shared (Robey, et al., 2000) (Curado, 2006).

Before focusing on the definition, it is important to first understand the difference between organizational learning and learning organization. The first concept is used to describe certain types of activities which take place in an organization. The second, learning organization, refers to a particular type of organizations, which are considered good at organizational learning (Tsang, 1997). It means that a learning organization is skilled at creating, acquiring and sharing knowledge and at modifying its behavior to replicate state-of-the-art knowledge and insights (Garvin, 1993).

Considering the complexity of the organizational learning concept, several possible definitions were extensively presented in the literature (Appendix 1). Despite the several interpretations, most of them agree in some aspects: it is a process that evolves over time; it is associated with knowledge acquisition and subsequent performance improvement (Garvin, 1993). Generally, it can be described as an intentional or unintentional organizational process (Robey, et al., 2000) by which organizations learn (Alegre & Chiva, 2008). Organizational learning is seen as a dynamic (Huber, 1991) and ongoing two-way process (Santos & Trespalacios, 2011) characterized by knowledge transfer among different levels of action, such as individual, group or inter-organizational (Gómez, et al., 2003; Santos & Trepalacios, 2011). It is an important concept, due to its essential contribution to resolve organizational problems, propose solutions and contribute to an effective decision making. The learning processes and performance improvements associated will represent competitive advantages for organizations (Rezaie & Bagheri, 2014). Organizational learning promotes continuous adaption and improvement of firms (Onag, et al., 2014).

Despite the common points, some important matters differ on organizational learning definitions. Some authors believe that behavioral change is required before learning can occur (Gómez, et al., 2003), but others claim that new ways of thinking are sufficient. Some authors also assume that information processing is the mechanism by which learning takes place while others suppose that insight-sharing, organizational routines and organization memory are needed (Garvin, 1993).

*b) Process*

Figure 1 reflects the continuity and dynamism of the organizational learning process – acquisition, transfer and integration at both individual, group and organization a level (Gómez, et al., 2003). A more complete approach suggests that this process has four stages (Huber, 1991):

**1.** Acquisition/creation of knowledge, through external sources (like oversea training programs) or internal development by performing different tasks in the organization;

**2.** Distribution/transfer of knowledge, which links individual and group learning and allows individuals to develop cognitive maps, through language, of the areas in which they operate;

**3.** Interpretation of knowledge characterized by the development of shared and coordinated decision making, acting as a nexus between the group and organizational levels; the group emerges as a fundamental element in the interpretation and integration of knowledge(López & Gómez, 2008);

**4.** Organizational memory, which is the result of integration of new knowledge and capabilities into organizational routines.

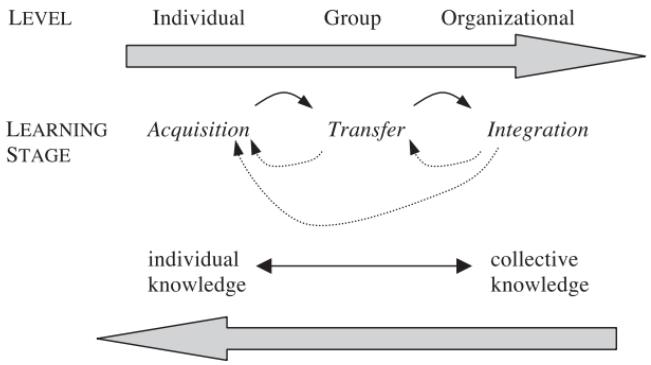


**Figure 1 - Organizational Learning Process (Gómez, et al., 2003)**

There is also the categorization of Organizational learning by the overlapping of three stages (Garvin, 1993):

1. Cognitive level, when employees are exposed to new ideas, expand their knowledge and start thinking in a different way;
2. Behavioral, when employees start to internalize new perspectives and adjust their behaviors;
3. Performance improvement, when changes in behavior lead to measurable improvements in results, such as superior quality, better delivery, or other tangible organization profits.

*c) Learning Cycle*

Companies that inhibit learning or hinder the application of new skills are exposed to individual and organizational stagnation (Tannenbaum, 1997). Leaders must encourage employees to try new things and search for support in developing their competencies (Gino & Staats, 2015).

The level of learning culture which an organization has can be positively related to the degree of sustainable competitive advantage (Yang, 2007). For an effective implementation of a learning culture to occur, an organization should focus itself on three main aspects: meaning, management and measurement. Firstly, a clear definition must be set and should be easy to apply and understand for learning to become a meaningful corporate goal. Regarding management, a practical and clear set of guidelines to apply need to be in place. Finally, a measurement tool is mandatory in order to assess and confirm the gains and the resultant learning level (Garvin, 1993).

Continuous learning means the process by which individual or organizational learning is fostered on a continuous basis (Tannenbaum, 1997). At individual level, continuous learning can be represented by a cycle (Figure 2). In general terms, it can start by a learning experience (workshop, peer advices, task force) contributing to the development of new skills, which can be applied on the job. Through application, individuals are rewarded, increasing the self-efficacy to learn new skills and perform them effectively and becoming more open to learn and to repeat the cycle. The internal feedback loops of Figure 2 mean that sometimes the process is not completely straightforward: a) learning something can be motivating by itself; b) application of new skills, even if not directly rewarded, can generate motivation to learn more; c) individuals can be rewarded for participating in learning experiences even new skills acquired are never applied.

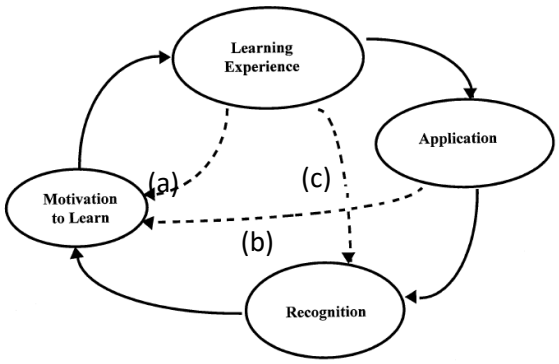


**Figure 2 - Continuous learning cycle (Tannenbaum, 1997)**

An organization by itself does not directly produce knowledge, as it is the active individual members who undertake actions to learn, interpret and process knowledge at the team level first, and then transfer it towards the organizational level (Figure 1), thus generating organizational knowledge (Stelmaszczyk, 2016). On the other hand, even though it is necessary, continuous learning at the individual level is not sufficient to influence perceived changes in knowledge and financial performance (Marsick & Watkins, 2003) and will not bring benefits for an organization if it is not transferred into an organizational level. (Stelmaszczyk, 2016). An organization needs to promote conditions that facilitate individual learning, commonly initiated by autonomous knowledge acquisition (Stelmaszczyk, 2016), and needs to put in place the required mechanism to enable, support, and reward the use in the organization of what was learned by its individuals (Marsick & Watkins, 2003). As a consequence, individuals increase their capacity to learn and they can collectively enhance the overall learning capacity of the organization (Marsick & Watkins, 2003).

Individual learning, by definition, is the acquisition of new knowledge, skills or attitudes that enhance an individual's capacity for action (Tannenbaum, 1997) and it is as important for an organization as it is for the individuals themselves (Stelmaszczyk, 2016). Individuals are agents through which the organizations learn (López & Gómez, 2008) and the shared organizational knowledge is bigger than the simple sum of individual learnings (Marsick & Watkins, 2003; Stelmaszczyk, 2016). Individual knowledge needs to be intensified and followed by knowledge broadening at the organizational level (Stelmaszczyk, 2016). Knowledge is more likely to be transferred effectively when the right incentives are in place (Garvin, 1993).

By extending their knowledge, employees accelerate processes of learning, promoting the overall development of the organization. In opposition, individuals who do not learn and do not acquire new skills and abilities have less chance of achieving success, tend to get worse results and over time can become a burden for an organization (Stelmaszczyk, 2016). Learning must be captured and embedded in organizational routines (ongoing systems, practices, and structures) so that it can be publicly shared and regularly used to purposely promote changes in knowledge performance (Marsick & Watkins, 2003) and to be considered organizational knowledge (López & Gómez, 2008).

The key to the development of organizational knowledge lies in the exchange of mental models and their subsequent institutionalization into the structure of organizational operations (López & Gómez, 2008). Rules, memory, values, the system of relationships or structure, and the underlying dynamic or pattern that characterizes the organization all need to change (Marsick & Watkins, 2003). Furthermore, an organization committed to learning seeks a full understanding of its environment (customers, competitors, and emerging technology), combined with managers' efforts to encourage employees to use company time to pursue knowledge that may lie outside the direct scope of their work (Calantone, et al., 2001).

The limits to organizational learning can be typified at two levels: individual and organizational. The individual barriers are related with defensive strategies to avoid vulnerability, risk taking, embarrassment and incompetence demonstrations. The second group consists of the universal phenomena called defensive organizational routines or barriers that can produce misfits, which consist of policies, practices and actions to avoid people to experience embarrassment or threats and to simultaneously avoid that they examine the causes for such situations (Argyris, 1994).

## 2.3. Learning Organization Trend

Today, the importance of learning capability is revealed for all organizations (Rezaie & Bagheri, 2014) and daily pressure demands the transformation into a learning organization (Luhn, 2016). Many organizations are being encouraged by Government to transform themselves into knowledge-rich, continuously learning and dynamically innovating organizations. Workers are also encouraged to gain advanced qualifications, to participate in lifelong learning and to develop new skills for employment (Casey, 2013). Changing from a traditional organization to a learning organization aims to transform it into a more responsive and effective organization that is able to better withstand and survive the environmental pressure and hence improve its performance in the face of a turbulent environment (Rijal, 2010).

Generally, a learning organization is one which is able to create, acquire and transfer knowledge and, at the same time, to modify its behavior in face of new knowledge or new perspectives (Garvin, 1993). Additionally,

a learning organization is one that has embedded the capacity to adapt or to respond quickly and in novel ways while working to remove barriers to learning (Marsick & Watkins, 2003). As the aim of a learning organization is a continuous organizational development (Luhn, 2016), these organizations spread constantly their ability to create their own future creativity (Luhn, 2016) and to be more adaptive and flexible against market conditions and tap the learning of individuals to improve organizational learning and performance (Rijal, 2010).

Advantages of implementing a learning organization include a higher problem solving ability, a value increase of the human capital, reduction of risks in decision-making processes and a higher satisfaction of employees (Luhn, 2016). Furthermore, learning organizations drive collaborative and supportive atmospheres like no other type of organizational approach. More important perhaps, they involve doing the right thing and also include giving hope to people, increasing satisfaction in the workplace, generating creativity and ideas-sharing, leveling vertical hierarchies, and augmenting participation, which helps in increasing the organization's effectiveness as a whole (Singh, 2016) – see Figure 3. Learning Organization is a combined process of internal and external organizational systems alignment, culture of learning (emphasis on exploration and information), open communication, staff empowerment, and support for professional development (Singh, 2016). Learning organization also contributes to the increase of the profits and the growth of the firm in a highly competitive environment. It promotes as well the originality within the organization, bringing innovativeness amongst the employees so that new ideas, methods and procedures are simplified and often new ways are developed (Singh, 2016). Innovation, as an individual and collective learning process to find new ways of solving problems, requires the successful implementation of creative ideas within an organization and it is considerably related to organizational learning (Onag, et al., 2014).

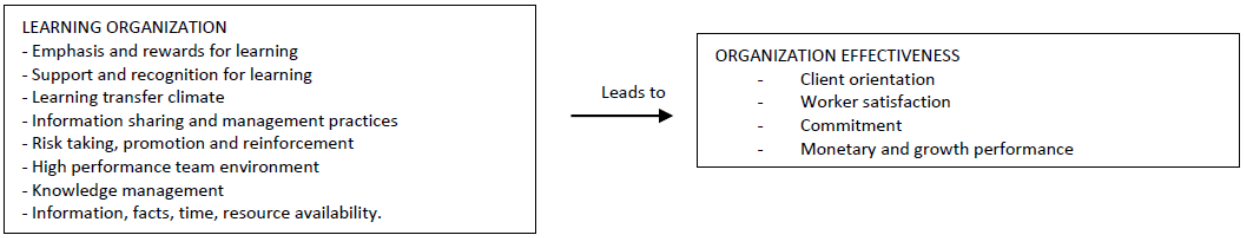

**Figure 3 - Impact of learning organization on the Organizational effectiveness (Singh, 2016)**

Furthermore, employees commitment is also an element that influences learning Organizations. Thus, it would be appropriate for the today's organization to hire people with a greater tendency for high organizational commitment and companies need to take all measures to increase this commitment in order to become learning organizations (Atak & Erturgut, 2010).

Becoming a learning organization might take a long time. Despite this, there are some initial steps that can be taken immediately by companies which wish to become learning organizations (Garvin, 1993):

- Foster an **environment that is conducive to learning**. Training in brainstorming, problem solving, evaluating experiments and other core skills;
- **Open boundaries and encourage the exchange of ideas**, through meetings and project teams across all organization or even outside of it (customers, suppliers, etc);.
- **Managers should estipulate a supportive and open environment,** encouraging the creation of learning forums and activities which foster learning, all of them tailored to business needs:
    - **Strategic reviews,** assess the changing and competitive environment and company's portfolio, technology and market position;
    - **Systems audits,** review of health of processes and delivery systems;
    - **Internal Benchmarking reports,** identify best-in-class activities within the company;
    - **Study mission,** to better understand company's performance and distinctive skills.

There are some skills that an organization must have in order to become a learning organization (Garvin, 1993): (1) systematic problem-solving; (2) experimenting; (3) learning from past experience; (4) learning from others; (5) passing the knowledge on to others fast and efficiently. These can enhance the organization's capacity to obtain knowledge, and modify its behavior based on new knowledge and insights. Of the five, systematic problem-solving and learning from past experience are perhaps the most crucial (Ferincz, 2016):

1) *Systematic problem solving* – the organization should rely on the scientific method rather than guesswork for diagnosing problems (Adopt "plan, do,check, act" cycle), insist on fact-based management, and use data rather than assumptions as background for decision making.
2) *Experimentation* - systematic searching for and testing of new knowledge.
3) *Learning from past experience* - Reanalyze and evaluate carefully and systematically the past successes and failures, and record the lessons learned and make them available for employees.
4) *Learning from others* – looking to the outside environment to gain a new perspective can be a fertile source of ideas and catalyse creative thinking (e.g. benchmarking).
5) *Transferring knowledge* - spread the knowledge quickly and efficiently through all the organization by many ways: written, oral, visual reports, site visits, personnel rotation or training programs.

Focusing on problems, it might be required to identify some recurrent errors that organizations do when they try to become learning organizations. The first one is related with the association of learning purely to problem solving activities, which strongly limits it. These organizations should rather implement a critical self-reflection to identify how and who is contributing to organizational problems. The second problem is related with the association of organizational learning to an only unique and exclusive question and automatic process that only depends on employee's motivation and dedication (Argyris, 1991).

## 2.4. Organizational Learning Dimensions

Learning capability is a complex and multidimensional construct (Gómez, et al., 2003). Managers have long known that "if you cannot measure it, you cannot manage it" (Garvin, 1993). In this study the measurement multidimensional construct scale proposed by (Gómez, et al., 2003) and it is considered that organizations should show a high degree of learning in each dimension to be able to state that its learning capability is high. This approach originally considers four distinct dimensions which represent the basic elements needed for learning: managerial commitment; systems perspective; openness and experimentation; transfer and integration. Additionally and aiming to complement the proposed measurement scale, distrust will be added as fifth learning dimension. The five dimensions and their importance will be shortly explained below.

### 2.4.1. Managerial Commitment

The fast and ever changing business environment of today has induced managers to seek new ways to improve their organizations' capability of predicting the need for change and of continuous adaptation (Onag, et al., 2014). As change agents, managers can be considered as transformational leaders if they take the responsibility for revitalizing an organization, defining the need for change, creating new visions, mobilizing commitment for those visions and ultimately for transforming an organization (Rijal, 2010). More informal learning and knowledge-sharing may occur if senior managers believe that the company's ability to learn is the key to competitive advantage (Shipton, et al., 2013). Nevertheless, managers should realize that even if they can stimulate an organizational learning climate, learning and stakeholder-based outcomes ultimately depend largely on acts of employees (Berson, et al., 2015).

In this sense, organizations could benefit by selecting and training managers to exhibit a leadership style that encourages learning, as employees who are more aware of the strategic intent of their leaders consequently are more open to learning (Berson, et al., 2015). Leaders must have the talent to assist the organization in developing a vision of what it can be, to mobilize the organization to believe and work towards achieving the new vision and, finally, to institutionalize the changes required which must last over time (Rijal, 2010). Furthermore, front-line managers should identify employees to learn and to share their knowledge, encouraging such behavioral patterns (Yang, 2007).

Organizations often expect that learning and knowledge creation will take place continuously for individuals and that they will share what they know (Marsick & Watkins, 2003). However, a charismatic leadership is the key driving mechanism which, together with trust within the team, facilitates an organizational learning climate that ultimately yields long-term organizational outcomes (Berson, et al., 2015). Managers should encourage members to overcome environmental uncertainty by continuous learning through the mechanism of organizational learning (Rijal, 2010), by sending teams members to relevant training courses to improve knowledge and competencies (Avci, 2014).

Through effective communication, leaders can make employees to understand the goals and aspirations of the learning organization and the importance of organizational learning in the transformation process, changing their mental models and encouraging them to seek learning-oriented behaviors and continuous learning (Rijal, 2010). It is important to mention that, in addition to a modification of company's strategy, its climate and culture must be changed too in order to support a learning orientation to the organization (Marsick & Watkins, 2003; Ferincz, 2016). Climate and culture are built by leaders and other key people who learn from their experience, influence the learning of others and generate an environment of expectations that shapes and supports the desired results (Marsick & Watkins, 2003).

Management role is not to directly influence knowledge sharing but to stimulate and create conditions for this emergent process (Hooff & Huysman, 2009). Managers must support learning processes, foster external and internal information gathering, encourage cooperation and communication among departments, reward employee involvement and commitment to learning activities, develop a formal procedure for data warehousing and data mining, and allow employees to share information about customers or other stakeholders (Santos & Trespalacios, 2011). Managers should also encourage a climate of altruism in their organizations to reduce the presence of counterproductive work relationships with interpersonal disputes, thus avoiding negative consequences for organizations and contributing to obtain a competitive advantage in the challenging global market (Guinot, et al., 2015).

Those leaders who create a trusting work environment and develop psychological safety through the use of informal mentoring initiatives, encourage employees to see challenges as opportunities and to learn from mistakes, thus making them more likely to generate learnings (Chadwick & Raver, 2015). Unfortunately, organizations that learn from their failures are extremely rare as managers are thinking about failure the wrong way and any failure that can be hidden is hidden (Ferincz, 2016). Top manager's risk aversion may increase inter-functional conflicts because each department tries to avoid the responsibility for occasional but unavoidable failures and as a result likely focuses on less risky tasks on each area (Santos & Trespalacios, 2011). However, a Learning Organization is functional only if it does not suffer from previous failures to adapt

and learn (Ferincz, 2016). Therefore managers must ensure that the right approach to learning from failure is applied considering the kind of work (Edmondson, 2011).

In this sense, re-evaluation of past learning processes is an important part of organizational learning (Ferincz, 2016). Thus, a learning culture can be created by persisting to understand what happened when things went wrong by implementing a culture which makes people feel comfortable to learn from their mistakes. This can be achieved through the execution of the following: constant reporting of failures; systematic analysis of failures; and proactive search for opportunities to experiment. (Edmondson, 2011).

**H1:** Managerial commitment has appositive effect on the knowledge transfer

### 2.4.2. System perspective

In order to deal with rapidly changing environments, organizations have been attempting to increase their effectiveness and efficiency by enhancing their organizational learning (Lick, 2006). Furthermore, as a result of increasing global competition, the challenge every business enterprise faces is to find ways of improving its competitiveness (Lin, 2008).

The importance of the organization structure and its influence in organizational learning is another factor that should be taken into account. As an organization structure expands, the respective business units may become competitors internally and partners from an external point of view. Therefore, it is extremely important to learn how resources can be integrated, thus promoting also knowledge transfer across the organization (Lin, 2008).

A formal and complex organizational structure is considered as disadvantageous to knowledge-sharing promotion (Lin, 2008). Therefore, the right organizational structure is characterized by clear roles and responsibilities for knowledge sharing, less formal division to reduce structural barriers and a more "informal" climate to foster trust, identification and reciprocity between employees (Hooff & Huysman, 2009). Companies with highly centralized decision power lead to less autonomy and therefore do not

promote learning environments, as managers need to allow employees to share knowledge with other departments (Lin, 2008).

The different individuals, departments and areas should have a clear view of the organization's objectives and realize how they can contribute to their realization (Gómez, et al., 2003). Nevertheless, a division by departments may cause differences between resources owned by each department. This leads to different levels of input and may indirectly reduce the willingness of departments to share knowledge and benefit from it (Lin, 2008).

As an organization learns through their teams, as more the workers learn at an individual level, more knowledge can be put under interpretation, processed in teams and then distributed towards organizational level (Stelmaszczyk, 2016). In general terms, there are two possible learning structures: vertical and horizontal. Vertical learning is typically observed in hierarchical organizations, in which members obtain new knowledge from those above and below their respective hierarchic levels unidirectional lyrics. On the other hand, horizontal learning usually prevails in non-hierarchical organizations, in which participants acquire new knowledge multi-directionally from colleagues regardless of their position (Park, et al., 2015). A non-hierarchical organization promotes a better learning environment and is more effective than a hierarchical one in terms of providing diverse learning contents, facilitating effective knowledge sharing and in enhancing problem solving capabilities (Park, et al., 2015). For successful outcomes, high-tech firms using vertical learning may periodically reorganize group members or rotate job assignments especially when they deal with complex tasks (Figure 4). Alternatively, they can reshape their learning methods by adopting horizontal learning with a non-hierarchical structure (Park, et al., 2015).

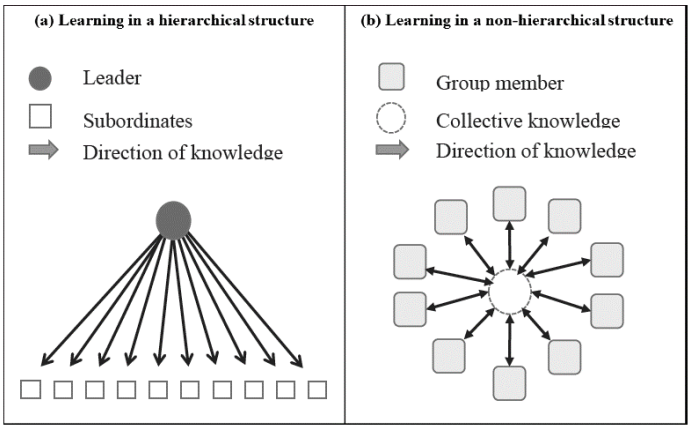


**Figure 4 - Organizational Structure and Learning Methods (Park, et al., 2015)**

Learning is a collective experience and the result of an interactive and interdependent process (Ferincz, 2016). To achieve the vision of a learning organization, leaders need to communicate a clear and persuasive vision of the future organization to obtain commitment from employees, encourage followers to respond to uncertainty in creative and innovative ways and to seek learning-oriented behaviors (Rijal, 2010). Knowledge sharing between departments is guided or interfered by managers (Lin, 2008). Through their separate functions, key people (separately and collectively) in the organization arrive at a strategy and its success is due in part to the organization's ability to act cohesively. Thus, a learning organization needs alignment on the vision about what to do, share the meaning of its intentions, and the capacity to work together (Marsick & Watkins, 2003).

Not only is a modification or recreation of company's strategy required, but the organization or its culture must also change (Ferincz, 2016) because the organization culture serves as a filter to focus its attention (Marsick & Watkins, 2003). Organizational culture is a crucial factor to promote social dynamics beneficial to knowledge sharing: establishing and communicating a knowledge-friendly culture with openness, innovativeness, and willingness to share learnings; establishing clear vision, objectives and clear values related to knowledge; creating an organizational structure that showed who was responsible for which knowledge activities and that had small formal barriers to interaction between different parts of the organization; establishing and maintaining an IT infrastructure that efficiently and effectively helps the organization's members to identify where relevant knowledge is located (Hooff & Huysman, 2009).

**H2:** Viewing organization as a whole system increments the knowledge transfer

### 2.4.3. Openness and experimentation

Knowledge has little value to organizations if its holders are not motivated to apply it in ways that benefit the organization as a whole (Chadwick & Raver, 2015). Especially in knowledge-intensive contexts and in turbulent environments, employees' flexibility also plays an important role expressing the  the willing to change, learning behavior and risk taking attitudes of employees, which can be considered as indicators of good individual performance (Camps, et al., 2016).

Aiming to improve employees' flexibility through learning, organizations must actively encourage: (1) experimentation, involving the level to which new ideas and suggestions are received sympathetically within the organization (try new ideas, be curious and carry out changes); (2) risk taking, encompassing the tolerance of ambiguity, uncertainty and errors (failure is essential for effective organizational learning); (3) interaction with the external environment which is beyond the organization's direct control; (4) dialogue, i.e. a collective inquiry into the processes, assumptions and certainties that make up everyday experience; and (5) participative decision making (the degree of influence employees have in the decision-making process of the organization) (Camps, et al., 2016).

Even knowing that human tendency is to hope for the best and try to avoid failures at all costs, the willingness to go beyond obvious or superficial reasons and try to understand the root causes once failures are detected is also a driver to organizational learning (Edmondson, 2011). An open climate which encourages new ideas and points of views (Onag, et al., 2014) should be implemented and leaders must constantly emphasize that mistakes are learning opportunities rather than cause for embarrassment or punishment (Gino & Staats, 2015). Motivating people to go from first order reasons to understanding second and third order reasons can be a major challenge and requires discipline and a sophisticated analysis to ensure that the right lessons are learned and that the right remedies will be employed in future situations (Edmondson, 2011).

Further to the detection and analysis of failures and their reasons, systematic experimentation is another important activity to promote effective learning: failures will be produced strategically and accept that failure will be not option, knowing that those failures will bring valuable information. The focus should be to worry less about failures, recognizing its inevitability, and learn from them to succeed (Edmondson, 2011).

An essential factor that adds value in organizational culture is the degree to which it supports and promotes innovation and entrepreneurship because, within a rapidly changing environment, innovation plays a crucial part in the long-term survival of an organization (Rijal, 2010). Organizational learning supports creativity and innovation, leads to knowledge and new ideas and increases the capability to understand and use them (Rezaie & Bagheri, 2014).

One of the current major challenges for organizations is how to generate work environments with a high capacity for organizational learning (Guinot, et al., 2015). A true learning culture stimulates experimentation, encourages responsible risk taking, reflects a readiness to recognize errors and learn from them, and promotes open and intense communication, cooperation, interdependence and knowledge sharing (Santos & Trespalacios, 2011). A learning environment also recognizes individual ideas and accomplishments, avoids barriers to apply new skills and promotes opportunities for individuals to practice and apply what they have learned and to be sufficiently rewarded (Tannenbaum, 1997).

Furthermore, individuals who altruistically engage in experimentation, risk taking, dialog, interaction with the external environment and participative decision making boost organizational learning. Altruism in organizations promotes the development of healthy relationships with strong affective and emotional connections and prevents the occurrence of relationship conflicts in organizations (Guinot, et al., 2015).

Openness is also related with knowledge sharing and with an organizational learning culture. Therefore, within a team, individuals which score high on openness should have roles related with knowledge acquisition and the dissemination of that knowledge within the team (Matzler, et al., 2008).

**H3:** Openness and experimentation environment has a positive effect on the knowledge transfer

### 2.4.4. Knowledge transfer and integration

Organizational learning offers an optimistic and humanistic antidote to the problems plaguing organizations (Robey, et al., 2000). For an organization to be able to benefit from its potential "intellectual capital" of knowledge, individuals must make this knowledge available, sharing it with co-workers (Hooff & Huysman, 2009). A knowledge-sharing culture is a must have in learning organizations (Atak & Erturgut, 2010) and organizational learning is itself an outcome of it (Yang, 2007).

Individual attitudes towards learning and sharing are the two factors which impact significantly the organizational knowledge sharing within an organizations (Yang, 2007). The flow of knowledge depends on knowledge-sharing behaviors of employees but the altruistic sharing of one's knowledge with others does not conform with human's nature. Thus, in a knowledge-based era, to motivate employees to share their knowledge is the most difficult activity of knowledge management and study factors affecting knowledge sharing are hugely important (Hung & Chuang, s.d.). Through an effective sharing process, individuals are able and allowed to think about others' ideas, learning from them and at the same time enhancing their capabilities (Yang, 2007).

Knowledge is not simply an aggregate of information that could be de-coupled from its context, knowledge has a tacit dimension and is socially embedded in the context where it takes shape and that this creates meaning and therefore knowledge sharing is more than transferring knowledge (Hooff & Huysman, 2009). Knowledge sharing is considered as a function of organizational culture, leadership roles and individual behaviors (Yang, 2007).

Knowledge sharing is an emergent process, influenced by the social dynamics between individuals, thus it cannot be forced. Even considering that management does not have a role in knowledge sharing, by providing organizational and technical infrastructures, management can facilitate, stimulate, and influence the emergence of social capital, which in turn influences knowledge sharing (Hooff & Huysman, 2009). By encouraging these practices, organizational performance could be enhanced (Yang, 2007).

Additionally, personal characteristics also play a key role on knowledge sharing (Matzler, et al., 2008). Nevertheless, although individual attitudes to sharing, storing and learning are related with knowledge sharing, this is an outcome of more than a positive attitude to do it (Yang, 2007). Therefore, companies can promote knowledge sharing via personnel screening. As employees with high score on agreeableness, openness and conscientiousness are more willing to engage in sharing knowledge, manager should compose teams and assigned functions accordingly (Matzler, et al., 2008). Moreover, managers should stimulate and facilitate employees to share the knowledge at individual and organizational levels (Yang, 2007).

To be a learning organization, companies need to become adept at translating new knowledge into new ways of behaving, managing actively learning process to ensure that it occurs by design rather than by change (Garvin, 1993). Thus, organizational learning involves the required systems to transfer individuals' experience into knowledge and store and spread that knowledge across the entire organization (Yang, 2007). In this sense, focus on technical infrastructures, information technology is an important ingredient in the design of learning organizations (Figure 5), by providing an infrastructure for storing, accessing and revising some of the elements of organizational memory. Controversially, before an organization can leverage information technology to enable organizational learning, the appropriate technologies must be implemented and used. But, the successful implementation of the technologies that enable organizational learning depends on an organization's present capacity to learn (Robey, et al., 2000).

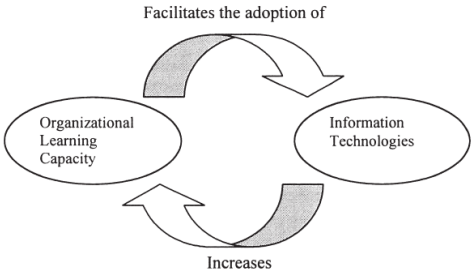


**Figure 5 - Relation between organizational learning capacity and information technologies (Robey, et al., 2000)**

To enable interactive dispute environment, managers should establish systems to capture and share learning, internet or intranet based systems, to provide intra-communication (Avci, 2014). Thus, the required systems

should be created by managers in order to convert individual knowledge into organizational knowledge, preventing its depreciation and enhancing organizational capabilities (Yang, 2007). To manage and feed those knowledge systems, employees with high levels of conscientiousness are more suitable to those functions as they are more willing to document their knowledge and share it, to enter their knowledge on data bases and maintaining such data bases (Matzler, et al., 2008).

To share non-confidential knowledge which cannot be stored in data bases, employees with higher agreeableness and therefore stronger social ties at the workplace should be assigned to the associated functions of boundary spanners between teams (Matzler, et al., 2008).

### 2.4.5. Trust

The social or relational factors that characterize personal interactions should also play a key role in the Organizational Learning process. One of the most important of such factors is trust (Santos & Trespalacios, 2011). Trust within teams significantly predicted an organizational learning climate

(Berson, et al., 2015). In this sense, managers should realize that the full impact of their leadership on organizational learning climate and outcomes may not be realized unless trust among followers is simultaneously encouraged (Berson, et al., 2015). Managers must encourage trust among functional areas, foster proximity between team members and ensure team members' stability. Furthermore, they must use formal programs to develop better understanding and encourage temporary personnel mobility between groups to enhance the consideration of different perspectives (Santos & Trespalacios, 2011).

Leaders need to use their charisma to positively influence relationships among a collective of individuals, so that their willingness to engage in learning increases, which in turn benefits the organization (Berson, et al., 2015). The social interaction needed for this mutual exchange of tacit and explicit knowledge means that an organizational climate that promotes knowledge creation (characterized by individual autonomy, commitment to creation and adoption of new knowledge, fluctuation and creative chaos, diversity of thinking and open dialogue) likely requires interpersonal trust (Santos & Trespalacios, 2011).

Moreover, interpersonal trust makes employees more committed to the process and willing to accept occasional failures and risk inherent to the uncertain environments involved in knowledge creation. Without mutual interpersonal trust, employees would be skeptical about the intentions and behaviors of others and would likely withhold knowledge from them (Santos & Trespalacios, 2011).

Fostering a culture of trust in organizations can be considered essential to boost an organizational learning process. An altruistic work environment without the presence of relationship conflicts is a key condition to encourage organizational trust (Guinot, et al., 2015). Trust increases the quality of information exchange and improves relationships among departments and when trust exists people are more inclined to ask for help and take risks with new and creative ideas as well as to cooperate (Santos & Trespalacios, 2011).

The establishment of a psychological contract between employer and employee, through trust, is a constructive approach in developing a knowledge-sharing culture. It is as well as a way to motivate employees to share what they know and apply the knowledge of others (Santos & Trespalacios, 2011). Thus, when trust exists, organizational learning is more productive and high-quality knowledge is created. (Santos & Trespalacios, 2011)

When employees believe in the honest and benevolent behavior of others, they enjoy the low uncertainty in their personal relationships, which encourages them to exchange relevant information, accept changes, question accepted beliefs, and cooperate in the uncertain process of knowledge creation. This kind of attitude may facilitate a win-win relationship between the company and its employees, which reduces the possibilities of exploitation and makes easier the creation of organizational learning and knowledge (Santos & Trespalacios, 2011).

The expected relationship between the other four organizational learning dimensions originally identified and trust is reciprocal, with growth and change in one dimension supporting and reinforcing growth in the other (Gómez, et al., 2003). Therefore, the opposite relationship is expected regarding original dimensions and distrust scale added.

**H4**: Distrust between employees reduces the level of willingness for knowledge transfer.

## 2.5. Research Conceptual Model

Figure 6 shows the proposed research conceptual model. Three sub-scales (Managerial Commitment, Systems Perspective and Openness & Experimentation) have a positive relationship with knowledge transfer and integration. This means that knowledge transfer willingness increases when the three sub-scales increase. With distrust, the relationship is negative, meaning that with an increase of distrust between employees, knowledge transfer desire decreases.

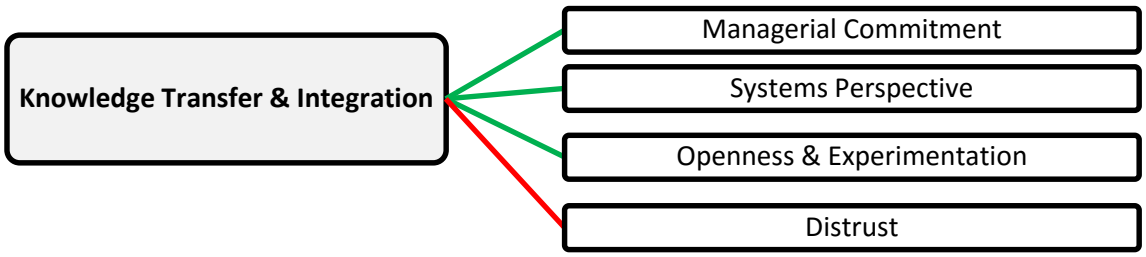


**Figure 6 - Research Conceptual Model (own elaboration)**

Based on the research model proposed, five main hypotheses are defined:

**H1:** Managerial commitment has a positive effect on knowledge transfer

**H2:** Viewing an organization as a whole system increments knowledge transfer

**H3:** Openness and an experimentation environment have a positive effect on knowledge transfer

**H4**: Distrust between employees reduces the degree of willingness for knowledge transfer

# 3. METHODOLOGY

In terms of purpose, this is an applied and validation study. On the other hand, it is a descriptive study in terms of data collection method through a survey, which pretends to validate previous findings proved for another industry and national context. The methodology followed is shown in Figure 7.

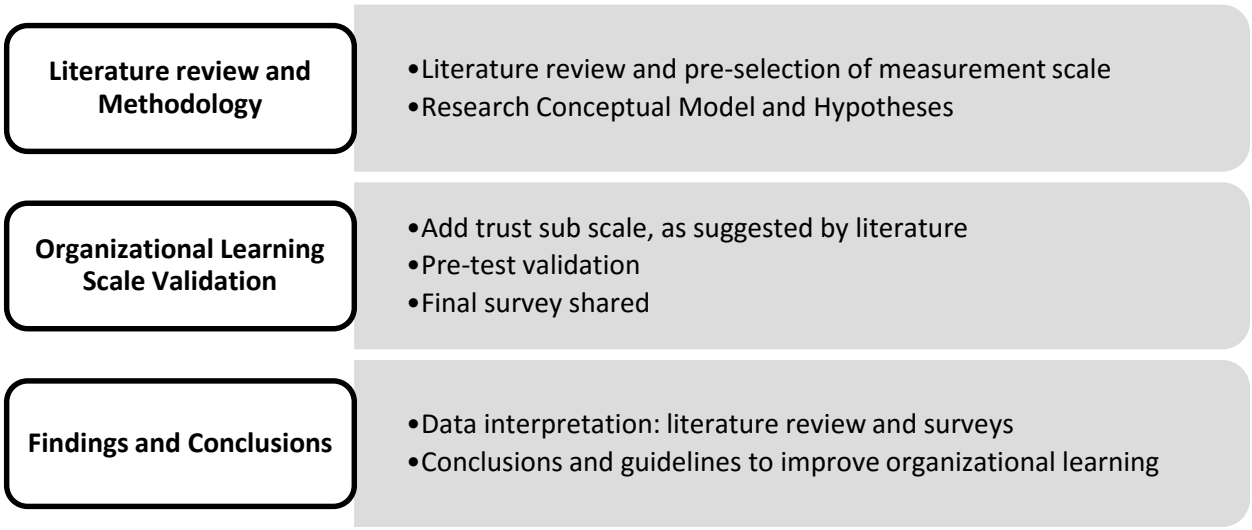


**Figure 7 – Methodology flow (own elaboration)**

## 3.1. Data

The data used to test the hypotheses were collected by means of a survey in a company within the energy sector. The company under study employs more than 2,000 people and HQ are located in Lisbon, Portugal.

This company was chosen because it is knowledge-intensive and its industry is a highly competitive and capital intensive one. Furthermore, learning has been a critical factor for the company survival due to rapid technological advances and competition in its activity sector. Thus, sharing knowledge internally is required on a continuous basis. This sometimes concerns knowledge about clients, technical skills or market developments, but sharing knowledge is a prominent issue in this company. Additionally, knowledge transfer is becoming even more important in the company selected due to the specific technical skills required and to the age gap of its employees, which could compromise the company's memory of acquired knowledge and, therefore, its performance in the near future.

Data was analyzed by using IBM SPSS (Statistical Package for Social Sciences) and Microsoft Office Excel.

## 3.2. Research Instrument

Data were collected through a survey instrument, using a quantitative methodology. The adopted scale for measuring organizational learning was developed by (Gómez, et al., 2003) and has four main sub-scales: managerial commitment; systems perspective; openness and experimentation; transfer and integration. As suggested by the authors, a trust sub-scale was added in order to complement the original instrument. This sub-scale was designed to measure an individual's general level of trust toward other people in the organization and it was proposed by (Yamagishi, 1986).

The questionnaire (Appendix 2) used had two main parts: the first part collected demographic data and asked about age, gender, level of education, contract type and job position. The second part consisted on the dimensions of organizational learning, 21 items were used, organized according to Table 1. All variables were measured using a 1-to-7 Likert-type scale (1-totally disagree to 7-totally agree).

**Table 1 - Questions and associated dimensions**

| Dimensions | Questions | Source |
|---|---|---|
| Managerial Commitment (MC) | 1, 5, 9 (R), 12, 17 | (Gómez, et al., 2003) |
| Systems perspective (SP) | 8, 13, 19 | |
| Openness and experimentation (O) | 3, 10, 14, 18 | |
| Knowledge transfer and integration (KT) | 4, 7 (R), 21 | |
| Distrust (DT) | 2, 6, 11 (R), 16, 20 | (Yamagishi, 1986) |

A pre-test was performed in order to have an early feedback to the questionnaire regarding structure, wording and incongruities. The questionnaire was then revised accordingly and some minor changes were implemented, mainly related with rephrasing and to turn easier to fulfill the level of education and age.

The sample was chosen by convenience, as the information was gathered from employees who were willing to participate in the study across all the departments of the selected organization. Even sample was selected because of ease of accessibility, specific respondents were randomly chosen.

Questionnaires were personally delivered to potential participants and the ones successfully completed were collected in the same manner. Participants were given assurances of confidentiality, anonymity and that the information gathered would be used for academic purposes only. Participants were encouraged to respond honestly based on their own experience in the selected organization and to pay due attention to items when answering to the questions. A concise language was used to ensure that participants were able to accurately answer questions (avoiding biasing effects), the confidentiality of their answers was assured and the scale types were alternated (MacKenzie & Podsakoff, 2012).

## 3.3. Data Treatment

The main objective of the data gathered was to prove that organizational learning is correlated with statistical significance to the proposed dimensions in the selected conceptual model. After data insertion into IBM SPSS, a first check was performed in order to assure that all surveys were duly completed. Afterwards, the normality and internal consistency of the data were assessed, as well as the correlation and linear regression obtained. Detailed analysis and conclusions are presented in the next chapter.

# 4. RESULTS AND DISCUSSION

This chapter will present the main information about data gathered and associated results.

## 4.1. Demographic Information

Appendix 3 provides a summary of the demographic information about the sample. Data was collected between June and July 2017, with 25 participants. The age of participants ranges between 21 and 41 years old, with an average of 28 years. The majority of participants (64%) holds a master degree. Regarding participants' tenure, the majority (52%) have 2 years working experience within the company. In what concerns job position, all participants were contributors, which could have an impact on the responses gathered due to different roles, aspirations and perceptions.

The responses gathered were then analyzed in SPSS. The results were grouped according to Table 1 and subscales created to assess the research conceptual model.

## 4.2. Normality

Due to the sample size, it was not possible to assure a normal distribution for each individual item. Nevertheless, for each subscale, the normality was assured (Appendix 3).

## 4.3. Internal Consistency Reliability

When using a Likert-type scale, as the 1-7 scale used in this work, it is mandatory to calculate the Cronbach's alpha to check internal consistency reliability for each subscale. Cronbach's alpha ranges between 0 and 1 and the closer to 1.0 the greater the internal consistency of the items in each subscale (Gliem & Gliem, 2003). For Cronbach's alpha: greater than 0.9 the internal consistency is considered excellent, greater than 0.8 is good, greater than 0 .7 is acceptable, greater than 0 .6 is questionable, greater than 0.5 is poor, and finally, if Cronbach's alpha is lower than 0.5 the internal consistency is considered unacceptable (George & Mallery, 2003). Thus, it can be assumed that an alpha of 0.8 is probably a reasonable goal (Gliem & Gliem, 2003).

Cronbach's alphas of this study range between 0.6 and 0.8 (Table 2). The best subscale in terms of internal consistency is Managerial Commitment (Cronbach's Alpha = 0.82). On the other hand, Knowledge Transfer and Integration displays the lowest Cronbach's Alpha of 0.58, which can be explained by the lack of understanding of the questions. Overall, survey proposed has a good internal consistency, as low alpha coefficients between 0.60 and 0.69 in scales with few items are acceptable (Leech, et al., 2005).

Even a Cronbach's Alpha above 0.6 is considered acceptable, during the evaluation of instrument's conclusions it is required attention and precaution (Pestana & Gageiro, 2005) (Marôco & Marques, 2013).

**Table 2 - Cronbach's alpha for each subscale**

| Subscale | Cronbach's alpha | Quantity of items |
|---|---|---|
| Managerial Commitment (MC) | 0.82 | 5 |
| Systems perspective (SP) | 0.80 | 3 |
| Openness and experimentation (O) | 0.63 | 4 |
| Knowledge transfer and integration (KT) | 0.58 | 3 |
| Distrust (DT) | 0.72 | 5 |

## 4.4. Results

Research hypotheses (Section 2.5) were tested by a statistical analysis and results will now be described.

### 4.4.1. Descriptive Analysis

In order to identify significant differences between responses, indicators of descriptive analysis are presented in Table 3. In the following, the purpose of dimensions and differences noted will be discussed.

**Table 3 - Descriptive analysis for each subscale**

| Dimensions | Min | Max | Avg | Standard Deviation |
|---|---|---|---|---|
| Managerial Commitment (MC) | 2.80 | 6.40 | 4.35 | 0.98 |
| Systems perspective (SP) | 1.33 | 6.67 | 3.94 | 1,23 |
| Openness and experimentation (O) | 3.25 | 6.00 | 4.64 | 0.78 |
| Knowledge transfer and integration (KT) | 2.33 | 6.67 | 4.16 | 1.00 |
| Distrust (T) | 2.80 | 5.80 | 4.12 | 0.80 |

- *Managerial commitment*

Average value obtained for this dimension was 4.35. It intends to assess how management can support a learning culture providing the required tools and encouraging the development of the right environment to promote acquisition, creation and transfer of knowledge.

From Table 4, it is possible to conclude that there is an overall good perception regarding managerial commitment to promote a good learning environment. This internal learning environment, in which creation and application of new knowledge is encouraged, is imposed by the current globalization trend (López & Gómez, 2008). Even though management's role is not to directly influence knowledge-sharing, they should stimulate it and guarantee the conditions necessary for this to occur (Hooff & Huysman, 2009).

**Table 4 - Managerial commitment dimension - Average of the items**

| Question | Item | Avg |
|---|---|---|
| Q1 | The managers frequently involve their staff in important decision-making process | 4.2 |
| Q5 | The company's management looks favorably on carrying out changes in any area to adapt to and/or keep ahead of new environmental situations | 4.5 |
| Q9r | Employee learning is considered more of an expense than an investment | 4.1 |
| Q12 | In this company, innovative ideas that work are rewarded | 4.2 |
| Q17 | Employee learning capability is considered a key factor in this company | 4.8 |

- *Systems perspective*

Average score for this dimension was 3.94. *Systems perspective* evaluates the capacity of the organization to work as a whole, the contribution of different departments to develop organizational learning through a joint effort to enhance relationships and exchange information, perceptions and beliefs.

From Table 5, it seems that people working on this company know their goals, but the way to work, take the right actions and achieve them together needs to be improved. This can be explained with the size of the company and on the interconnected departments that are spread sometimes even in different geographies.

**Table 5 - Systems perspective dimension - Average of the items**

| Question | Item | Avg |
|---|---|---|
| Q8 | All parts that make up this company (departments, sections, work teams, individuals) are interconnected, working together in a coordinated fashion | 3.4 |
| Q13 | All parts that make up this company (departments, sections, work teams, individuals) are well aware of how they contribute to achieve the overall objectives | 3.7 |
| Q19 | All employees have generalized knowledge regarding this company's objectives. | 4.7 |

The growth of an organization needs to be carefully monitored. With an increase of the structure complexity, business units sometimes start to compete internally and is thus important to know how resources can be integrated (Lin, 2008). From a learning perspective, formalization and complexity of organizational structure should be avoided, reducing structural barriers. Nevertheless, organization structure should clearly define

roles and responsibilities and has less formal division to promote an "informal" learning environment to foster trust between employees (Hooff & Huysman, 2009). Organizations should work cohesively, key people need to be aligned about what to do and have the capacity to work together (Marsick & Watkins, 2003).

A horizontal and non-hierarchical structure should be promoted, encouraging a better learning environment, facilitating effective knowledge sharing and enhancing problem solving skills (Park, et al., 2015).

- *Openness and experimentation*

The average score for this dimension is 4.64, the highest obtained. This dimension assesses the required climate to allow generative learning. This involves the establishment of an environment which allows new ideas and accepts the notion that it is possible to learn from mistakes. Moreover, a culture where different points of view and experiences are well accepted should exist, developing the capacity to learn from them.

From Table 6, it is possible to observe that employees recognize the importance to learn from others' experiences (mainly from external sources, Q10), allowing them to constantly renew and improve their skills and to contribute to organizational learning as a whole. Employees are also well aware about the importance of learning from peers, particularly in a highly competitive industry business environment.

**Table 6 – Openness and experimentation - Average of the items**

| Question | Item | Avg |
|---|---|---|
| Q3 | This company follows up what other firms in the sector are doing, adopting the practices and techniques it believes to be useful and interesting | 4.9 |
| Q10 | Experiences and ideas provided by external sources (advisors, customers, training firms, etc) are considered useful instruments for this company's learning | 5.4 |
| Q14 | This company promotes experimentation and innovations as a way of improving work processes | 3.8 |
| Q18 | Part of this company's culture is that employees can express their opinions and make suggestions regarding procedures currently in place for carrying out tasks | 4.4 |

It is mandatory to promote an open culture to encourage employees to fail and experiment and, simultaneously, to learn with internal and external sources to improve processes in place and company's performance. The company needs to assure the right culture for employees to take risks and accept learnings.

- *Knowledge Transfer and Integration*

Items under Knowledge Transfer and Integration scored on average 4.16. It intends to assess two closely linked processes: knowledge and subsequent integration. For these processes to happen, there should exist no barriers within the company which obstruct the transfer of knowledge. Knowledge needs to be internally spread at individual level through direct interaction, communication and discussion of ideas.

From Table 7, it is possible to conclude that the main factor for knowledge transfer is noticed by employees, is the capability to work as a team. One thing that needs to be improved is the willing to discuss the previous failures and the capacity to learn from them. The low value of Q4 can be explained by the huge investments amount involved in the company's sector, which can results in employees' afraid to fail.

**Table 7 – Knowledge Transfer and Integration - Average of the items**

| Question | Item | Avg |
|---|---|---|
| Q4 | Errors and failures are always discussed and analyzed at all levels within the company. | 3.6 |
| Q7r | In this company, teamwork is not the usual way to work. | 4.7 |
| Q21 | Employees are encouraged to talk among themselves about new ideas, programs, and activities that might be of use to the company. | 4.2 |

To assure the transfer and integration of knowledge it is also important to put in place internet or intranet based systems to transform individuals' experience into knowledge, store and spread that knowledge across the entire company and, at the same time, to create organizational memory.

- *Distrust*

Average score obtained for this dimension was 4.12. It intends to assess the level of distrust among employees. From the literature, it is possible to conclude that an honest and benevolent behavior of employees is directly related with their willingness to establish personal relationships, exchange information, accept changes, question beliefs and become involved in the creation of knowledge.

From results, it is possible to observe that employees are not yet convinced about the good intentions of their colleagues (Table 8). This could mean that employees are mainly focused on their self-interest and are

not well aware of the benefits of working together to achieve company's goals. A cooperation culture should be further promoted.

**Table 8 – Distrust - Average of the items**

| Question | Item | Avg |
|---|---|---|
| Q2 | Most people tell a lie they can benefit by doing so. | 3.9 |
| Q6 | Some people do not cooperate because they pursue only their own short-term self-interest. Thus, things that can be done well if people cooperate often fail because of these people. | 4.9 |
| Q11r | Most people are basically honest. | 3.4 |
| Q16 | Those devoted to unselfish causes are often exploited by others. | 4.3 |
| Q20 | There will be more people who will not work if the social security system is developed further. | 4.0 |

### 4.4.2. Correlations

From Table 9, it is possible to notice a positive and meaningful relationship between all subscales at 99% confidence level: system perspective (SP), managerial commitment (MC), openness and experimentation (OP) and knowledge transfer (KT). On the other hand, there is a negative and meaningful correlation between distrust (DT) and knowledge transfer (KT) at 95% confidence level. The correlation between distrust and the other subscales (MC, SP, OP), even if negative is not statistically significant. The major correlation reached came from managerial commitment and knowledge transfer.

**Table 9 – Statistical correlation between subscales**

| Pearson Correlation | MC | SP | OP | KT |
|---|---|---|---|---|
| **MC** | | | | |
| **SP** | ,587** | | | |
| **OP** | ,762** | ,709** | | |
| **KT** | **,807**** | ,740** | ,767** | |
| **DT** | -,370 | -,185 | -,334 | -,504* |

**Significance level p<0.01, n=25; *Significance level p<0.05, n=25

### 4.4.3. Linear Regression

A linear regression was used to assess the relationship between subscales and predict the value of dependent variable. A linear regression with a coefficient of determination $R^2$ above 0. 5, the adjustment of proposed model is considered acceptable (Marôco, 2007). In spite of this, the higher the $R^2$ the greatest adjustment.

Three linear models were tested in order to determine the one with the greatest $R^2$, therefore the one with the better adjustment between independents variables (MC, SP, OP and DT) and knowledge transfer and integration (KT). The three models considered were the following:

$$\textbf{Model 1.}\ \ \mathbf{KT} = \beta_1\mathbf{MC} + \beta_2\mathbf{SP} + \beta_3\mathbf{OP} - \beta_4\mathbf{DT};$$

$$\textbf{Model 2.}\ \mathbf{KT} = \beta_1\mathbf{MC} + \beta_2\mathbf{SP} + \beta_3\mathbf{OP};$$

$$\textbf{Model 3.}\ \mathbf{KT} = \beta_1\mathbf{DTxMC} + \beta_2\mathbf{DTxSP} + \beta_3\mathbf{DTxOP}.$$

Results obtained are given in Table 10. Comparing three models (Table 10), it can be concluded that Model 1 provides the best adjustment (higher $R^2$ = 0.817). The four factors explain approximately 82% of total variance of knowledge transfer and integration and influence it at a very good level. On the other hand, the β coefficient expresses the influence of independent variables on the dependent variable (KT). Managerial commitment (β =0.421) has more influence on Knowledge Transfer and Integration than systems perspective (β =0.382). Furthermore, it is observed that distrust has a negative impact (β =-0.246) on knowledge transfer.

**Table 10 - Influence of independent variables on knowledge transfer**

| Linear Regression Results | Model 1 | | Model 2 | | Model 3 | |
|---|---|---|---|---|---|---|
| | *Coef.* | *Sig.* | *Coef.* | *Sig.* | *Coef.* | *Sig.* |
| MC | **0.421** | **0.012** | 0.492 | 0.007 | 1.448 | 0.162 |
| SP | **0.382** | **0.011** | 0.349 | 0.030 | 1.857 | 0.077 |
| OP | 0.093 | 0.596 | 0.144 | 0.454 | -1.702 | 0.104 |
| DT | **-0.246** | **0.028** | - | - | - | - |
| $R^2$ | **0.817** | | 0.766 | | 0.255 | |
| $R^2$ adjusted | **0.781** | | 0.732 | | 0.115 | |

Analyzing Model 1, it is possible to notice a positive influence of managerial commitment and systems perspective on knowledge transfer (95% confidence level). On the other hand, it is visible a negative influence of distrust among employees on knowledge transfer and integration (95% confidence level). For the openness and experimentation subscale, it was not confirmed the correlation with knowledge transfer.

Focusing on Model 2, it is also possible to notice a positive impact of managerial commitment and systems perspective on knowledge transfer. On this model, the positive influence of managerial commitment on knowledge transfer is statistically more robust (99% confidence level) and higher (β =0.492 > 0.421) compared with Model 1. As occurred for Model 1, the relation of openness and experimentation subscale was not possible to validate. Comparing Models 1 and 2, the best alignment is assured through Model 1, proving the importance of the negative effect of distrust subscale. Nevertheless, the adjustment reached was also considered acceptable ($R^2$ = 0.766, >0.5)

For Model 3, it was not possible to assure statistically the correlation of all the independent variable with knowledge transfer. Furthermore, the $R^2$ is far below than 0.5, thus considered not acceptable.

As a consequence of conclusions beforehand mentioned, hypotheses "H1: Managerial commitment has a positive effect on the knowledge transfer" and "H2: Viewing organization as a whole system increments the knowledge transfer" were accepted. Hypotheses "H3: Openness and experimentation environment has a positive effect on the knowledge transfer" was rejected since no statistically significant effect of openness and experimentation on knowledge transfer and integration has been found. Hypothesis "H4: The level of distrust between employees reduces the degree of knowledge transfer willingness" was accepted because the negative effect was proven.

Summing up, while managerial commitment and systems perspective have positive effects on knowledge transfer and integration, distrust has a negative effect and openness and experimentation has no effect.

## 4.5. Discussion of Results Based on Literature Review

As per literature review, the findings suggest the following: there is a positive effect of managerial commitment and systems perspective on knowledge transfer willingness; there is a negative effect of distrust on knowledge transfer willingness.

Organizations often expect that learning and knowledge creation will continuously take place (Marsick & Watkins, 2003). However, the key driver for this to happen is a charismatic leadership which promotes an organizational learning climate that ultimately yields long-term organizational outcomes (Berson, et al., 2015). Also, informal learning and knowledge-sharing may occur more frequently if senior managers believe that the company's ability to learn is the key to competitive advantage (Shipton, et al., 2013). Thus, managers should encourage members to overcome environmental uncertainty through continuous learning (Rijal, 2010) and propose relevant training to improve knowledge and competence of their members (Avci, 2014).

Even though it is assumed that management's role is not in directly influencing knowledge sharing but in stimulating and creating conditions for its growth (Hooff & Huysman, 2009), organizations could benefit by

selecting and training managers with the right leadership style that encourages learning (Berson, et al., 2015). Those leaders should create a trusting environment to encourage employees to see challenges as opportunities (Chadwick & Raver, 2015). From Model 1 and Model 2, it is possible to prove the key role of managerial commitment promoting knowledge transfer. In both models, the higher influence on knowledge transfer was from managerial commitment. From the correlation table (Table 9), the greatest value was also from managerial commitment and knowledge transfer, supporting further this importance.

Trust, is another dimension that should play a key role in the Organizational Learning process (Santos & Trespalacios, 2011). Managers should realize that the full impact of their leadership on organizational learning climate will only be noticed if trust among followers is assured (Berson, et al., 2015). Therefore, managers must encourage trust among areas and foster the physical proximity of team members (Santos & Trespalacios, 2011). By doing this, they are more likely to successfully establish an organizational learning climate characterized by an improved employees' willingness to engage in learning (Berson, et al., 2015).

Finally, organizational structure is another factor that should be stressed and whose positive effect in the organizational learning process was also proven by the results of this study. It is crucial to establish the right organizational structure, which involves the definition of clear roles and responsibilities: less formal division to reduce structural barriers and an "informal" climate to foster more trust among employees (Hooff & Huysman, 2009). Furthermore, each department and area should clearly know the company's goals and understand what they need to do to achieve them (Gómez, et al., 2003).

As mentioned before, the major contributor of knowledge transfer was managerial commitment, proving the importance of top management attitudes. Even slightly minor, the system perspective presented itself as the second major contribution on knowledge transfer. Correlation analysis have proved the positive and meaningful relationship between this two subscales, and as a consequence if a company adopts measures to improve one dimension, the other one will also benefit, and the knowledge transfer willingness too. Also, by improving these, the distrust between employees will be minimized, as a result of negative correlation between distrust and knowledge transfer dimension.

# 5. CONCLUSIONS

This study has addressed the dimensions of organizational learning in a company competing in the energy industry. The effect of four dimensions (managerial commitment, system perspective, openness and experimentation and distrust) on knowledge transfer has been also assessed.

Contrary as occurred in a faraway past, knowledge now is the most valuable asset that any organization can generate (López & Gómez, 2008). Organizations know that learning is a competitive advantage and thus define as their primary purpose to become effective learning organizations (Atak & Erturgut, 2010).

Even knowledge is not a commodity which can be easily captured and transferred (Fernie, et al., 2003), there are factors that promote knowledge transfer. The results of this study show that managerial commitment exerts the most important role in promoting and assuring that the right environment for knowledge transfer takes place. Also, it is recognized that systems perspective, which represents the capacity of the organization to work as an integrated system, is another factor that encourages significantly knowledge transfer. Furthermore, and also extremely important, is the trust needed between employees to willingly share their own knowledge.

In order to deal with a rapidly changing and highly competitive business environment, the development of knowledge sharing needs a broad approach characterized by acquisition of knowledge from internal and external sources and investment in mentoring and training initiatives (Yang, 2007).

Moreover, Organizational culture is a crucial aspect to promote social dynamics valuable to knowledge sharing. The required aspects identified by the literature are: knowledge-friendly culture with openness, innovativeness; clear vision and objectives, and clear values related to knowledge; organizational structure where responsible for knowledge activities are clearly identified; small formal barriers to interaction between different organization departments; IT infrastructure that efficiently and effectively helped organizational members to learn and store the new knowledge (Hooff & Huysman, 2009).

This study makes a contribution to the literature by supporting the perspective that knowledge transfer is positively affect by managerial commitment and system perspective. Additionally, the distrust dimension and its negative effect on knowledge transfer was proven and represents the main contribution of this study. The influence of openness and experimentation was not confirmed through the sample studied.

In conclusion, and as expressed previously in this study, the past sources of competitive advantage like protected markets, physical, financial, or even technological assets are outdated (López & Gómez, 2008). Current business environment is more competitive and uncertain than in the past and, to succeed, organizations must learn, adapt quickly (Chadwick & Raver, 2015) and be flexible and innovative (Rijal, 2010).

Therefore, exceptional organizations are those that go beyond detecting and analyzing past failures and try to purposely generate intelligent failures to simulate learning and innovation (Edmondson, 2011). In this sense, organizational learning promotes the development of competencies valued by the clients and hardly imitable (Curado, 2006). Knowledge is the critical organizational resource needed for a company which aims to successfully compete and succeed in a global market (Gómez, et al., 2003). Better and faster learning than rivals is considered as the only resource for power and survival (Rezaie & Bagheri, 2014).

## 5.1. Limitations and future research directions

Although this study makes a number of contributions, there are some shortcomings. Firstly, the data was gathered from a single company, which could bias the results. Furthermore, it should be stressed that single industry conclusions have to be considered with caution and that it would be appropriate to determine their applicability to other industries. A multi-industry analysis would provide more robustness and evidences for the findings presented. Moreover, the sample size could be expanded, as data collected from a larger number of companies and industries will allow a more powerful hypothesis test.

In the same way, the samples studied were collected from a single country organization, based in Portugal. Generalizing the results to other cultural contexts is not straightforward. It is suggested to researchers in future studies that they may try to study knowledge transfer willingness in the context of different cultures.

Cross-national studies would be appreciated to compare with the results of the present study. Nevertheless, employees from the organization where the questionnaire was conducted come from a diverse, multicultural background, which softens the single country limitation.

Other limitation noticed is connected with the organizational structure. The sample was not differentiated by departments. It would be interesting to separately examine individual, team and organizational learning in every department of the company. Additionally, even though different hierarchical levels of employees were invited to participate in this study, aiming to gather information from different perspectives and to enhance statistical efficiency, only contributors responded to this survey.

Finally, in order to further support the findings of this research, it is also recommended to use qualitative analysis including interviews and focus groups. The researcher will get richer details using both quantitative and qualitative methods, since one method can corroborate or confirm the results of the other.

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# APPENDIX 1 – Organizational learning definitions

**Organizational Learning Definitions (based on Tsang, 1997)**

| Author | Definition |
|---|---|
| Argyris (1977) | "Organizational learning is a process of detecting and correcting error" |
| Shrivastava (1981) | "process by which the organizational knowledge base is developed and shaped" |
| Fiol & Lyles (1985) | "Organizational learning means the process of improving actions through better knowledge and understanding" |
| Levitt & March (1988) | "organizations are seen as learning by encoding inferences from history into routines that guide behavior" |
| Stata (1989) | "Organizational learning occurs through shared insights, knowledge, and mental models…[and] builds on past knowledge and experience – that is, on memory" |
| Huber (1991) | "an entity learns if, through its processing of information, the range of its potential behaviors is changed" |
| Swieringa & Wierdsma (1992) | "Organizational learning means the changing of organizational behavior" |
| Cook & Yanow (1993) | "the acquiring, sustaining, or changing of intersubjective meanings through the artifactual vehicles of their expression and transmission and [through] the collective actions of the group" |
| Nicolini and Meznar (1995) | "organizational learning is a social construction which transforms acquired cognition into accountable abstract knowledge" |
| Tannenbaum (1997) | "A change in organization's capacity for doing something new" |
| Robey, et al. (2000) | "Organization process, both intentional and unintentional, enabling the acquisition of, access to, and revision of the organizational memory, thereby providing direction to organizational action" |
| Gómez, et al. (2003) | "capability of an organization to process knowledge-create, acquire, transfer and integrate knowledge and to modify its behaviors to reflect the new cognitive situation, with a view to improving its performance" |
| Curado (2006) | "product of organizational members' involvement in the interaction and sharing of experiences and knowledge" |
| Santos & Trespalacios (2011) | "occurs when individual knowledge gets transferred in the course of the social interactions that take place within the organization as a result of a shared interpretation among groups of individuals" |

# APPENDIX 2 – Organizational learning survey

The purpose of this survey is to study the main dimensions associated with the concept of organizational learning and the importance of continuous learning within organizations. The results of this study will be used and presented for the sole purpose of concluding a Master Thesis for the Corporate Sciences Degree of Lisboa School of Economics & Management (ISEG).

This survey is composed by 21 items regarding your current organization. Please answer to all items and for each item please circle the number corresponding to the answer that best matches your opinion, in which 1 represents "totally disagree" and 7 "totally agree".

Completion of this survey will take about 20-30 minutes and your participation is voluntary. All information provided is strictly confidential and anonymous. The results will be only used for academic purposes.

Thank you in advance for your consideration and the time you took in completing this survey.
Anything required please contact me by e-mail: sonia.manjua.pereira@gmail.com

**Gender:** ☐ Female ☐ Male **Age:** ____ Yrs

**Education Level:** ☐ 12 Yrs (High school) ☐ 15 Yrs (Bachelor) ☐ 16 Yrs (Post Graduate) ☐ 17 Yrs (Master) ☐ +18 Yrs

**Work experience in this company:** ___ Yrs

**Employment Status**: ☐ Contributor ☐ Manager **Contract Status**: ☐ Fixed-Term ☐ Permanent

Considering the current business environment, very challenging and rapidly changing in all business areas, developing a Learning Organization is a goal of many organizations. An important step in developing this capability is the assessment of the current situation for those organizations. Considering this and in the context of the organization for which you currently work, please circle the response for each statement below that best matches your opinion.

| 1 Totally Disagree | 2 Most of the times I disagree | 3 Disagree | 4 Neutral | 5 Most of the times I agree | 6 Agree | 7 Totally Agree |
|---|---|---|---|---|---|---|

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | The managers frequently involve their staff in important decision-making process. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2 | Most people tell a lie they can benefit by doing so. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3 | This company follows up what other firms in the sector are doing, adopting the practices and techniques it believes to be useful and interesting. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4 | Errors and failures are always discussed and analyzed at all levels within the company. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| 1 Totally Disagree | 2 Most of the times I disagree | 3 Disagree | 4 Neutral | 5 Most of the times I agree | 6 Agree | 7 Totally Agree |
|---|---|---|---|---|---|---|

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 5 | The company's management looks favorably on carrying out changes in any area to adapt to and/or keep ahead of new environmental situations. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6 | Some people do not cooperate because they pursue only their own short-term self-interest. Thus, things that can be done well if people cooperate often fail because of these people. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7 | In this company, teamwork is not the usual way to work. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | All parts that make up this company (departments, sections, work teams, individuals) are interconnected, working together in a coordinated fashion. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9 | Employee learning is considered more of an expense than an investment. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10 | Experiences and ideas provided by external sources (advisors, customers, training firms, etc.) are considered useful instruments for this company's learning. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11 | Most people are basically honest. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12 | In this company, innovative ideas that work are rewarded. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13 | All parts that make up this company (departments, sections, work teams and individuals) are well aware of how they contribute to achieve the overall objectives. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14 | This company promotes experimentation and innovation as a way of improving work processes. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15 | The company has instruments (manuals, databases, files, organizational routines, etc.) that allow past learnings to remain valid, although the employees are no longer the same. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16 | Those devoted to unselfish causes are often exploited by others. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17 | Employee learning capability is considered a key factor in this company. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18 | Part of this company's culture is that employees can express their opinions and make suggestions regarding procedures currently in place for carrying out tasks. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| 1 Totally Disagree | 2 Most of the times I disagree | 3 Disagree | 4 Neutral | 5 Most of the times I agree | 6 Agree | 7 Totally Agree |
|---|---|---|---|---|---|---|

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 19 | All employees have generalized knowledge regarding this company's objectives. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 20 | There will be more people who will not work if the social security system is developed further. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 21 | Employees are encouraged to talk among themselves about new ideas, programs, and activities that might be of use to the company. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

# APPENDIX 3 – SPSS Outputs

a) Sample demographics

| Demographic Profile | Frequency | Percentage (%) |
|---|---|---|
| **Gender:** | | |
| Male | 10 | 40 |
| Female | 15 | 60 |
| **Age:** | | |
| 21 | 1 | 4 |
| 23 | 1 | 4 |
| 24 | 1 | 4 |
| 25 | 5 | 20 |
| 26 | 5 | 20 |
| 27 | 4 | 16 |
| 28 | 2 | 8 |
| 30 | 1 | 4 |
| 31 | 1 | 4 |
| 33 | 1 | 4 |
| 34 | 1 | 4 |
| 37 | 1 | 4 |
| 41 | 1 | 4 |
| **Level of education:** | | |
| Bachelor (15 years) | 3 | 12 |
| Post Graduate (16 years) | 1 | 4 |
| Master (17 years) | 16 | 64 |
| +18 years | 5 | 20 |
| **Number of Years working in the company:** | | |
| 0,5 years | 3 | 12 |
| 1 years | 1 | 4 |
| 1,5 years | 1 | 4 |
| 2 years | 13 | 52 |
| 2,5 years | 1 | 4 |
| 3 years | 2 | 8 |
| 4 years | 1 | 4 |
| 5 years | 1 | 4 |
| 10 years | 1 | 4 |
| 17 years | 1 | 4 |
| **Job Position:** | | |
| Contributor | 25 | 100 |
| Manager | 0 | 0 |
| **Type of contract:** | | |
| Fixed-Term | 7 | 28 |
| Permanent | 18 | 72 |

b) Statistic descriptive

| | | | Estatística | Erro Padrão |
|---|---|---|---|---|
| MC | Média | | 4,3520 | ,19537 |
| | 95% Intervalo de Confiança para Média | Limite inferior | 3,9488 | |
| | | Limite superior | 4,7552 | |
| | 5% da média aparada | | 4,3267 | |
| | Mediana | | 4,0000 | |
| | Variância | | ,954 | |
| | Desvio Padrão | | ,97687 | |
| | Mínimo | | 2,80 | |
| | Máximo | | 6,40 | |
| SP | Média | | 3,9467 | ,24622 |
| | 95% Intervalo de Confiança para Média | Limite inferior | 3,4385 | |
| | | Limite superior | 4,4548 | |
| | 5% da média aparada | | 3,9407 | |
| | Mediana | | 4,0000 | |
| | Variância | | 1,516 | |
| | Desvio Padrão | | 1,23108 | |
| | Mínimo | | 1,33 | |
| | Máximo | | 6,67 | |
| OP | Média | | 4,6400 | ,15684 |
| | 95% Intervalo de Confiança para Média | Limite inferior | 4,3163 | |
| | | Limite superior | 4,9637 | |
| | 5% da média aparada | | 4,6444 | |
| | Mediana | | 4,5000 | |
| | Variância | | ,615 | |
| | Desvio Padrão | | ,78422 | |
| | Mínimo | | 3,25 | |
| | Máximo | | 6,00 | |
| KT | Média | | 4,1600 | ,20011 |
| | 95% Intervalo de Confiança para Média | Limite inferior | 3,7470 | |
| | | Limite superior | 4,5730 | |
| | 5% da média aparada | | 4,1222 | |
| | Mediana | | 4,0000 | |
| | Variância | | 1,001 | |
| | Desvio Padrão | | 1,00056 | |
| | Mínimo | | 2,33 | |
| | Máximo | | 6,67 | |
| DT | Média | | 4,1200 | ,15790 |
| | 95% Intervalo de Confiança para Média | Limite inferior | 3,7941 | |
| | | Limite superior | 4,4459 | |
| | 5% da média aparada | | 4,1044 | |
| | Mediana | | 4,2000 | |
| | Variância | | ,623 | |
| | Desvio Padrão | | ,78951 | |
| | Mínimo | | 2,80 | |

| | | | |
|---|---|---|---|
| | Máximo | 5,80 | |

c) Normality tests

| | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|
| | Estatística | df | Sig. | Estatística | Df | Sig. |
| MC | ,161 | 25 | ,095 | ,962 | 25 | ,454 |
| SP | ,137 | 25 | ,200* | ,974 | 25 | ,751 |
| OP | ,142 | 25 | ,200* | ,962 | 25 | ,465 |
| KT | ,164 | 25 | ,083 | ,953 | 25 | ,287 |
| DT | ,100 | 25 | ,200* | ,975 | 25 | ,769 |

d) Internal consistency

i. Managerial commitment (MC)

| Alfa de Cronbach | Alfa de Cronbach com base em itens padronizados | N de itens |
|---|---|---|
| ,816 | ,823 | 5 |

| | Média | Desvio Padrão | N |
|---|---|---|---|
| Q1MC | 4,20 | 1,32 | 25 |
| Q5MC | 4,52 | 1,08 | 25 |
| Q12MC | 4,16 | ,99 | 25 |
| Q17MC | 4,76 | 1,51 | 25 |
| Q9MCr | 4,12 | 1,45 | 25 |

ii. Systems Perspective (SP)

| Alfa de Cronbach | Alfa de Cronbach com base em itens padronizados | N de itens |
|---|---|---|
| ,801 | ,800 | 3 |

| | Média | Desvio Padrão | N |
|---|---|---|---|
| Q8SP | 3,44 | 1,61 | 25 |
| Q13SP | 3,72 | 1,40 | 25 |
| Q19SP | 4,68 | 1,35 | 25 |

iii. Openess and experimentation (OP)

| Alfa de Cronbach | Alfa de Cronbach com base em itens padronizados | N de itens |
|---|---|---|
| ,628 | ,625 | 4 |

| | Média | Desvio Padrão | N |
|---|---|---|---|
| Q3OP | 4,88 | 1,01 | 25 |
| Q10OP | 5,44 | ,92 | 25 |
| Q14OP | 3,80 | 1,47 | 25 |
| Q18OP | 4,44 | 1,08 | 25 |

iv. Knowledge transfer and integration (KT)

| Alfa de Cronbach | Alfa de Cronbach com base em itens padronizados | N de itens |
|---|---|---|
| ,580 | ,576 | 3 |

| | Média | Desvio Padrão | N |
|---|---|---|---|
| Q4KT | 3,64 | 1,25 | 25 |
| Q7KTr | 4,68 | 1,38 | 25 |
| Q21KT | 4,16 | 1,43 | 25 |

v. Distrust (DT)

| Alfa de Cronbach | Alfa de Cronbach com base em itens padronizados | N de itens |
|---|---|---|
| ,718 | ,717 | 5 |

| | Média | Desvio Padrão | N |
|---|---|---|---|
| Q2DT | 3,92 | 1,35 | 25 |
| Q6DT | 4,92 | 1,19 | 25 |
| Q16DT | 4,32 | ,80 | 25 |
| Q20DT | 4,00 | 1,04 | 25 |
| Q11DTr | 3,44 | 1,29 | 25 |

e) Correlations

| | | MC | SP | OP | KT | DT |
|---|---|---|---|---|---|---|
| MC | Correlação de Pearson | 1 | | | | |
| | Sig. (2 extremidades) | | | | | |
| | N | 25 | | | | |
| SP | Correlação de Pearson | ,587** | 1 | | | |
| | Sig. (2 extremidades) | ,002 | | | | |
| | N | 25 | 25 | | | |
| OP | Correlação de Pearson | ,762** | ,709** | 1 | | |
| | Sig. (2 extremidades) | ,000 | ,000 | | | |
| | N | 25 | 25 | 25 | | |
| KT | Correlação de Pearson | ,807** | ,740** | ,767** | 1 | |
| | Sig. (2 extremidades) | ,000 | ,000 | ,000 | | |
| | N | 25 | 25 | 25 | 25 | |
| DT | Correlação de Pearson | -,370 | -,185 | -,334 | -,504* | 1 |
| | Sig. (2 extremidades) | ,068 | ,377 | ,102 | ,010 | |
| | N | 25 | 25 | 25 | 25 | 25 |

**. A correlação é significativa no nível 0,01 (2 extremidades).

*. A correlação é significativa no nível 0,05 (2 extremidades).

f) Linear Regression

i. Model 1

| Variáveis inseridas | R | $R^2$ | $R^2$ ajustado | Erro padrão da estimativa |
|---|---|---|---|---|
| DT, SP, MC, OP | ,904 | ,817 | ,781 | ,46856 |

| Modelo | | Coeficientes não padronizados | | Coeficientes padronizados | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Erro Padrão | Beta | | |
| 1 | (Constante) | 1,796 | ,961 | | 1,868 | ,076 |
| | OP | ,118 | ,219 | ,093 | ,538 | ,596 |
| | SP | ,311 | ,111 | ,382 | 2,789 | ,011 |
| | MC | ,431 | ,155 | ,421 | 2,778 | ,012 |
| | DT | -,312 | ,132 | -,246 | -2,371 | ,028 |

ii. Model 2

| Variáveis inseridas | R | $R^2$ | $R^2$ ajustado | Erro padrão da estimativa |
|---|---|---|---|---|
| MC, SP, OP | ,875 | ,766 | ,732 | ,51756 |

| Modelo | | Coeficientes não padronizados | | Coeficientes padronizados | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Erro Padrão | Beta | | |
| 1 | (Constante) | -,005 | ,651 | | -,008 | ,994 |
| | OP | ,183 | ,240 | ,144 | ,762 | ,454 |
| | SP | ,284 | ,122 | ,349 | 2,320 | ,030 |
| | MC | ,504 | ,168 | ,492 | 3,001 | ,007 |

iii. Model 3

| Variáveis inseridas | R | $R^2$ | $R^2$ | Erro padrão da estimativa |
|---|---|---|---|---|
| DTMC, DTSP, DTOP | ,475 | ,225 | ,115 | ,94150 |

| Modelo | | Coeficientes não padronizados | | Coeficientes padronizados | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Erro Padrão | Beta | | |
| 1 | (Constante) | 3,535 | 1,000 | | 3,534 | ,002 |
| | DTOP | -,159 | ,094 | -,612 | -1,702 | ,104 |
| | DTSP | ,106 | ,057 | ,532 | 1,857 | ,077 |
| | DTMC | ,110 | ,076 | ,430 | 1,448 | ,162 |