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An Approach to Absorptive Capacity based on the Portuguese Textile Industry.

ABSTRACT:

The main purpose of this research is to identify the hidden knowledge and learning mechanisms in the organization in order to disclosure the tacit knowledge and transform it into explicit knowledge. Most firms usually tend to duplicate their efforts acquiring extra knowledge and new learning skills while forgetting to exploit the existing ones thus wasting one life time resources that could be applied to increase added value within the firm overall competitive advantage. This unique value in the shape of creation, acquisition, transformation and application of learning and knowledge is not disseminated throughout the individual, group and, ultimately, the company itself. This work is based on three variables that explain the behaviour of learning as the process of construction and acquisition of knowledge, namely internal social capital, technology and external social capital, which include the main attributes of learning and knowledge that help us to capture the essence of this symbiosis.

Absorptive Capacity provides the right tool to explore this uncertainty within the firm it is possible to achieve the perfect match between learning skills and knowledge needed to support the overall strategy of the firm.

This study has taken in to account a sample of the Portuguese textile industry and it is based on a multisectorial analysis that makes it possible a crossfunctional analysis to check on the validity of results in order to better understand and capture the dynamics of organizational behavior.

Key Words: Absorptive Capacity, Knowledge, Learning, Innovation, Cooperation.

INTRODUCTION:

The starting point: what really stroke me during my past experience auditing firms in various sectors of activity was generally the total absence of norms and procedures necessary to run the firm in an optimizing framework based on the efficient use of resources and capabilities. This is true for big companies that did not control the basic documents on operation grounds and sometimes the same department had several versions of the same paper to register basic operations. If this is true for elementary procedures what to say about more complex ones like the dissemination of knowledge among functional departments of the company. Who possesses the knowledge needed to implement and work with specific technology according to the rules manual in order to avoid undesirable accidents in the plant factory? What mechanisms are used to disseminate the learning skills amongst fellow partners on job procedures? These are some questions answered at the level of individual, group and organizational behavior that support this research in order to provide new insights about organizational behavior namely the absorptive capacity model that helps to understand and establish a relationship between learning and knowledge with the ultimate goal being the understanding of right learning techniques and creation, acquisition, transformation and application of knowledge to pursue enterprises overall strategies in a worldwide changing competitive environment.

I found that absorptive capacity was the answer and methodology that could help to understand and support this challenge about new frontiers for the academic research based on internal social capital, technology and external social capital. This almost forgotten theory help me to release and develop fundamental attributes to better describe learning and knowledge, updated work to capture the essence of the symbiosis described above. I had to face the challenge of developing enough attributes that could really explain how learning and knowledge behave themselves in order to rank the ones that could explain better this trend and behavior.

2. Literature Review:

2.1. The evolution of absorptive capacity

The capacity of an organization to recognize the value of new external information, assimilate and apply it for commercial purposes is crucial for firm performance under the innovation umbrella. That is how (Cohen and Levinthal, 1990) describe the absorptive capacity concept, a very relevant contribution on the field of research on organizational behavior.

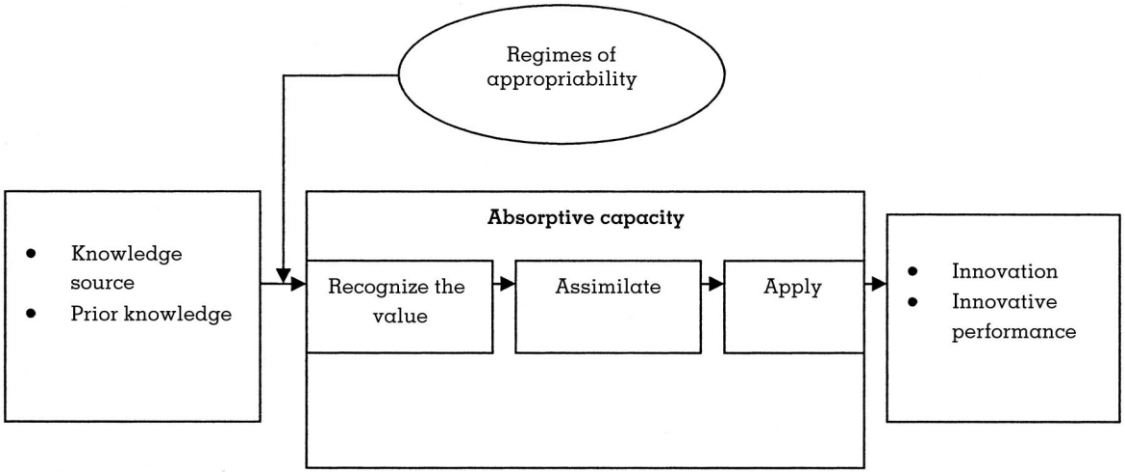
The first article called, Innovation and Learning: The Two faces of R&D (Economic Journal, 1989), stresses the fact that technological knowledge used to be public and could be utilized by organizations without a huge investment, but to get this new knowledge the firm needs to invest first of all in previous and complementary technology in order to use this public technology. This

means that absorptive capacity has indirect costs needed to assimilate and transform public knowledge.

This is a central idea in particular because it stands for the importance to develop R&D strategy even without fast results in launching new products in the market since it enables the firm to prepare future actions to assimilate knowledge.

The second article, Absorptive Capacity: A New Perspective on Learning and Innovation (Administrative Science Quartely, 1990), based on the first one states that the firm needs an initial and complementary knowledge to start the transfer process between the market and the company.

Figure 1. Absorptive Capacity (Cohen and Levinthal, 1990)



Source: Cohen and Levinthal

In the third and last article, Fortune Favors the Prepared Firm (Management Science, 1994), they develop the concept in the way that absorptive capacity also prepares the organization for further development in new technology, because it can better prevent new movements in the markets.

Other studies that are important to this research are for example: the critical revision of the absorptive capacity area (Lane, Koka, Pathak, 2006) which deals with the contribution of this concept to organizational learning, strategic alliances, knowledge management and resource based view of the firm.

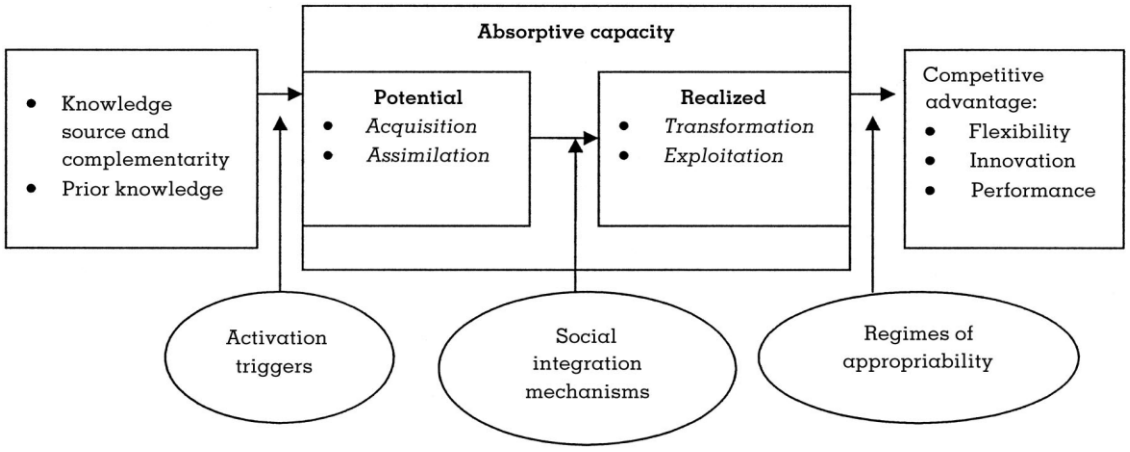
This study compares all articles published about absorptive capacity in the number of 289, most of them, around 225 articles, only made a slight reference without any discussion taking place. At the end only 4% have some contribution to the concept, namely (Dyer and Singh, 1998; Lane and Lubatkin, 1998; Van den Bosch, Volverda, De Bóer, 1999; Zahra and George, 2002).

The authors also found that in discussion are only three dimensions of analysis, acquisition, assimilation and exploitation, where the global trend is to identify absorptive capacity with knowledge (Ahuja and Katila, 2001; Kim, 1998; Mowery, Oxley and Silverman, 1996) innovation (Meeus, Oerlemans and Hage, 2001; Mowery, 1996); Tsai, 2001) and patents (Ahujaande Katila, 2001; Mowery, 1996).

The most important ones are: (Szulanski, 1996; Mowery, Oxley, Silverman, 1996; Lane and Lubatkin, 1998; Dyer and Singh, 1998; Koza and Lewin, 1998; Zahra and George, 2002 ; Van den Bosch, Volberda and Bóer, 1999) .

(Zahra and George, 2002) based their research on the double concept, namely potential absorptive capacity and realized absorptive capacity, because knowledge could be present in the organization in the form of tacit knowledge without being used in the form of new products.

Figure 2. Absorptive Capacity (Zahra and George, 2002)



Source: Zahra and George

3. Conceptual Model of Absorptive Capacity

The current model works with internal knowledge and external knowledge and not only with external knowledge as the prior model of Cohen and Levinthal, because one of the variables is creation of knowledge and also creation of new learning methodologies, applied to internal social capital technology and external social capital.

- Internal social capital (individual, group and organization)
- Technology (solution, testing, integration and import)
- External social capital (consumers, suppliers, distributors, competitors, universities).

Learning attributes and knowledge attributes enable us to better understand the potential absorptive capacity (creation/acquisition) and realized potential capacity (processing/application).
These are the attributes that shape knowledge behavior at the firm level according the absorptive capacity model:

Complementarity: with the need that the organization has to maintain an organizational architecture related and familiar with the capabilities and skills throughout their organizational evolution it will absorb knowledge and learning processes to be integrated within existing knowledge and facilitate their assimilation.

Accessibility: utmost importance because through appropriate rules and procedures it can have fast access to knowledge and learning processes, a competitive advantage that can be gained through the use of maps of knowledge and application of new technologies.

Updated: The existence of a knowledge and learning processes to date, allow at first instance to position the organization at the forefront of creating and acquiring skills that are fundamental to perform a real time reading of the dynamics and behavior of markets in the global economy.

Repository: to store information in formats easily identifiable and accessible to all employees of the organization is a form of organizational excellence that enables and encourages information sharing between the individual, group and organization. The knowledge in the repository is publicly available on the organization, which allows communities to assess and relate the knowledge and learning processes, potential/realized absorptive capacity, the integration/

import of new knowledge, learning mechanisms and higher value added for innovative activity of the organization.

Encoded: Proceed to the standardization of language and symbols existing in the organization, code means all the scattered information and to transform tacit knowledge into explicit knowledge and to identify and leverage existing capabilities in the organization to allow its use among all employees in order to increase competitive capacity in the context of the market.

Shared: The transmission of knowledge and learning processes among individual, group, organization and network is easier and more fluent if there is effective sharing of knowledge and learning among all parties as a measure to optimize the relationship and communication between those involved in process of creation and skills acquisition.

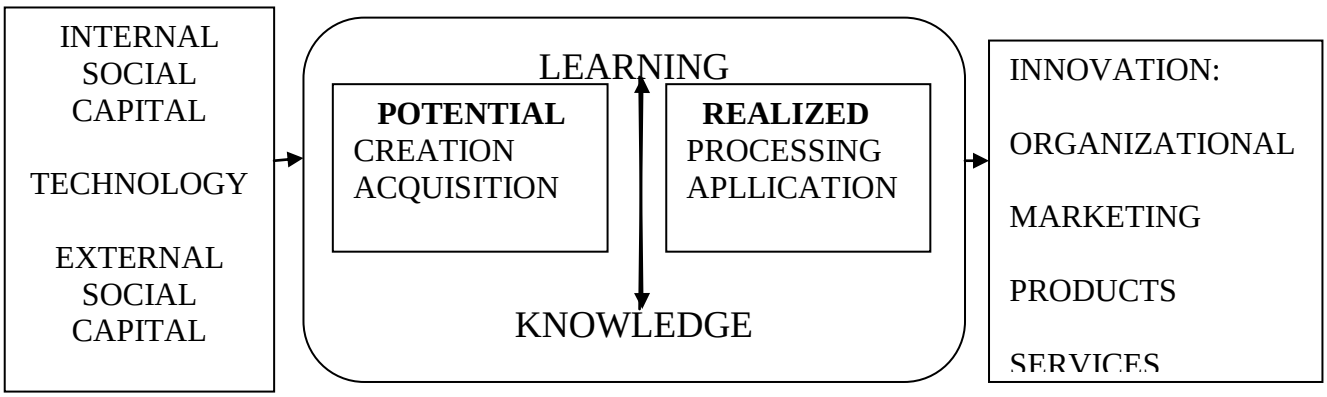
I developed a model of absorptive capacity of knowledge that can detect the main mechanisms from the point of view of creation and knowledge management. The model was tested on several occasions to reach the final model, which, after being properly refined, managed to capture the key moments and mechanisms for knowledge creation and the corresponding management.

The big challenge was, in effect, to create the model of absorptive capacity that would allow to perform a reading of the major behaviour trends of the Portuguese textile industry. The task involved, of course, an innovative approach with respect to existing models, namely, the pioneering model (Cohen and Levinthal, 1990) and (Zahra and George, 2002). The first establishes the basis of analysis (uptake value, complementarity), and the second distinguishes between potential absorptive capacity and realized absorptive capacity, although in the current study were made certain changes to include the concept of creation in potential absorptive capacity and the concept of application on realized absorptive capacity The work of (Allee, 1997) established the dichotomy and separation between learning and knowledge by which learning is the process of knowledge acquisition and construction, and usually, by (Allee, 1997), are in the organization at different times, in which the ultimate goal is the union between learning and knowledge in the organization's strategy.

The groundbreaking studies on the technologic**al** element of (Leonard Barton, **1**995) and the distinction between solving, experimentation, integration and import technology as the four elements aggregators were incorporated in an efficient way to model a technology platform that establishes the relationship and management between internal social capital (individual, group and organization) and external social capital (consumers, suppliers, distributors, universities and competitors), external actors in the market, the source of knowledge and learning processes in which Organizations must "recognize the value and use it for commercial purposes (Cohen and Levinthal, 1990). The innovative work of (Rene Beldeberos, 2004) allowed to add to the analysis of business cooperation and to the distinction between vertical cooperation (consumers, suppliers and distributors), horizontal cooperation (competitors) and institutional cooperation (universities). For the development of this work, this is the approach that is more conducive to the study of business cooperation. The results confirm the findings of (Belderbos, 2004), where the size of the organization is important for increasing the absorptive capacity and to develop relationships with universities and laboratories because they believe that size is critical to integrate institutional cooperation network.

Moreover, it is confirmed, according to (Kaiser, 2002) the distinction between vertical cooperation (consumers, distributors and suppliers) (Cassiman and Veugelers, 2002), and collaborations of the organization with the university (Fritsch and Lukas, 2001) institutional cooperation. This category segmentation allowed a clear and efficient treatment of foreign capital from the point of view of social capital theory, which was a great contribution to this study to enhance the distinction between "bonding" (ties in the community) and" bridging" (bridges between institutions) and to demonstrate the relationship between them.

Figure.3.The conceptual model of absorptive capacity



Source: Conceptual model developed by the author.

Developing mechanisms for learning, providing the creation and acquisition of necessary knowledge are the objectives of the organization, this is one of the biggest challenges that organizations must face, because as there are identical firms, knowledge must also be differentiated according to different methodologies and processes of learning. Thus, knowledge and learning processes can not be mass based but should be a great asset and very specific to each company, where, for example, the needs for training are also different from organization to organization.

These are the attributes that are the most important to capture learning behavior at the company level according to the absorptive capacity model:

Certified: to validate and certify the processes of learning in the organization allow to implement a total quality system, ensures the integrity and competitiveness, safety and traceability, focusing on measures and training schemes accredited for verifying the various organizational processes.

Speed: the transfer of knowledge and its learning processes, according to their type (Szulanski has, 1996) should be performed in time (Zander and Kogut, 1995; Zahra and George, 2002) to appear on the right time, anticipating the possible movement of potential competitors.

Efficiency: the level of absorptive capacity means the capacity that organizations have to identify, assimilate and exploit new knowledge from the perspective of innovation.

Simplification: perform the same tasks by applying a methodology and processes that reduce the execution time of an activity and costs.

Specialization: focusing resources and capabilities of the organization on its core-business "in order to enhance their competitiveness in the market and optimize the policy of" zero-defects "to enhance their technological assets in the best market segment.

Flexibility: how organizations have access to additional knowledge and reconfigure the current knowledge based on new learning models.

From a universe of about 17,000 companies, a sample of 331 companies were selected and we obtained 224 responses, of which three have been eliminated, which means a final value of 221 responses, a percentage of 73% in a period between January 2007 and August 2007.

4. Results

The reading and interpretation of results will be presented in a double analysis of knowledge and learning according to the total absorption capacity with regard to the twelve variables to study, the total absorption capacity, absorption capacity and cooperation: vertical, horizontal and institutional.

4.1. Global analysis of the internal social capital performance

In the overall analysis, given the analyzed variables, it notes that knowledge in particular, has a higher potential absorptive capacity compared to realized absorptive capacity, and that the element with the highest value is the acquisition weighted import knowledge, which once again reflects the profile of the mechanisms of subcontracting in the Portuguese textile industry. It is defined as a sector with little in-house technology, labor intensive and, in essence, imports all its resources and capabilities, and has no space and flexibility to develop projects of their own R & D + I and the concept of brand itself through innovation and total quality. The behavior for learning is that we have a higher realized absorptive capacity and a lower potential absorptive capacity. The best value for knowledge and learning was achieved by the group, meaning the strategic importance to develop a strong idea of community within the firm, that should be applied to the overall organization.

To find the value for total absorptive capacity for internal social capital we must cross the following variables from 1 to 5: individual, group and organization according potential absorptive

capacity (creation/acquisition) and realized absorptive capacity (processing/application) for knowledge attributes and learning attributes. ACINKM stands for absorptive capacity for individual based on knowledge; ACGRUKM for group, ACORGKM for organization, the final extension with LNG is applied to learning skills.

Table1. Total Absorptive Capacity for Internal Social Capital applied to Knowledge.
One-Sample Test

	Test Value = 0					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper
ACINDKM	37,046	220	,000	3,05807	2,8954	3,2208
ACGRUKM	38,362	220	,000	3,13725	2,9761	3,2984
ACORGKM	37,343	220	,000	3,12707	2,9620	3,2921

Source: Inquiry to Textile Companies in Portugal, 2007.

Table 2. Total Absorptive Capacity for Internal Social Capital applied to Knowledge.
One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
ACINDKM	221	3,0581	1,22715	,08255
ACGRUKM	221	3,1373	1,21576	,08178
ACORGKM	221	3,1271	1,24488	,08374

Source: Inquiry to Textile Companies in Portugal, 2007.

Table 3. Total Absorptive Capacity for Internal Social Capital applied to Learning

One-Sample Test

	Test Value = 0					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper
ACINDLNG	46,307	220	,000	3,23831	3,1005	3,3761
ACGRULNG	49,036	220	,000	3,37613	3,2404	3,5118
ACORGLNG	50,097	220	,000	3,36180	3,2295	3,4941

Source: Inquiry to Textile Companies in Portugal, 2007.

Table 4. Total Absorptive Capacity for Internal Social Capital applied to Learning

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
ACINDLNG	221	3,2383	1,03961	,06993
ACGRULNG	221	3,3761	1,02354	,06885
ACORGLNG	221	3,3618	,99761	,06711

Source: Inquiry to Textile Companies in Portugal, 2007.

4.2. Global analysis of technology performance

In the particular field of knowledge, the findings suggest that the values for potential absorptive capacity are higher than the ones to realized absorptive capacity.

We have different results for learning where realized absorptive capacity presents higher values than potential absorptive capacity, and the import variable has the highest values (knowledge/learning) due to the nature of Portuguese textile industry, which focuses its strategy on the dynamics of outsourcing and business cooperation.

To find the value for total absorptive capacity for technology we must cross the following variables from 1 to 5: individual, group and organization according potential absorptive capacity (creation/acquisition) and realized absorptive capacity (processing/application) for knowledge attributes and learning attributes. ACSOLKM stands for absorptive capacity for solution applied for knowledge; ACEXPKM for experience; ACINTKM for integration; ACIMPKM for importation of knowledge, the final extension with LNG is applied to learning.

Table 5. Total Absorptive Capacity for Technology applied to Knowledge.

One-Sample Test

	Test Value = 0					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper
ACSOLKM	31,111	218	,000	2,92637	2,7410	3,1118
ACEXPKM	31,949	219	,000	2,96174	2,7790	3,1444
ACINTKM	38,864	220	,000	3,21342	3,0505	3,3764
ACIMPKM	41,581	220	,000	3,31014	3,1533	3,4670

Source: Inquiry to Textile Companies in Portugal, 2007.

Table 6. Total Absorptive Capacity for Technology applied to Knowledge.
One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
ACSOLKM	219	2,9264	1,39200	,09406
ACEXPKM	220	2,9617	1,37498	,09270
ACINTKM	221	3,2134	1,22918	,08268
ACIMPKM	221	3,3101	1,18345	,07961

Source: Inquiry to Textile Companies in Portugal, 2007.

Table 7. Total Absorptive Capacity for Technology applied to Learning
One-Sample Test

	Test Value = 0					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper
ACSOLLNG	45,072	220	,000	3,26188	3,1192	3,4045
ACEXPLNG	45,281	220	,000	3,27847	3,1358	3,4212
ACINTLNG	59,905	220	,000	3,80109	3,6760	3,9261
ACIMPLNG	60,951	217	,000	3,81135	3,6881	3,9346

Source: Inquiry to Textile Companies in Portugal, 2007.

Table 8. Total Absorptive Capacity for Technology applied to Learning
One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
ACSOLLNG	221	3,2619	1,07587	,07237
ACEXPLNG	221	3,2785	1,07634	,07240
ACINTLNG	221	3,8011	,94329	,06345
ACIMPLNG	218	3,8114	,92327	,06253

Source: Inquiry to Textile Companies in Portugal, 2007.

4.3. Global analysis of external social capital performance

We have the same pattern for external social capital, that means the following: for knowledge there is a higher potential absorptive capacity compared to realized absorptive capacity and for learning there is a higher value for realized absorptive capacity compared to potential absorptive

capacity. The consumers have the best rank, meaning that for this industry still are the most important agent for external social capital, while competitors have the lowest rank, this is valid to knowledge and learning..

To find the value for total absorptive capacity for external social capital we must cross the following variables from 1 to 5: individual, group and organization according potential absorptive capacity (creation/acquisition) and realized absorptive capacity (processing/application) for knowledge attributes and learning attributes. ACCONKM stands for absorptive capacity on consumers based on knowledge; ACSUPKM for suppliers; ACDISKM for distributors; ACUNIKM for universities; ACCOMPKM for competition, the final extension with LNG is applied to learning.

Table 9. Total Absorptive Capacity for External Social Capital applied to Knowledge

One-Sample Test

	Test Value = 0					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper
ACCONKM	36,505	220	,000	3,06542	2,8999	3,2309
ACSUPKM	34,408	220	,000	3,05317	2,8783	3,2280
ACDISKM	33,367	220	,000	2,94174	2,7680	3,1155
ACUNIKM	27,049	220	,000	2,62104	2,4301	2,8120
ACCOMPKM	26,283	220	,000	2,54883	2,3577	2,7400

Source: Inquiry to Textile Companies in Portugal, 2007.

Table 10. Total Absorptive Capacity for External Social Capital applied to Knowledge
One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
ACCONKM	221	3,0654	1,24835	,08397
ACSUPKM	221	3,0532	1,31913	,08873
ACDISKM	221	2,9417	1,31062	,08816
ACUNIKM	221	2,6210	1,44052	,09690
ACCOMPKM	221	2,5488	1,44166	,09698

Source: Inquiry to Textile Companies in Portugal, 2007

Table 11. Total Absorptive Capacity for External Social Capital applied to Learning

One-Sample Test

	Test Value = 0					
	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper
ACCONLNG	51,710	220	,000	3,49076	3,3577	3,6238
ACSUPLNG	52,490	220	,000	3,45965	3,3298	3,5895
ACDISLNG	55,939	220	,000	3,42402	3,3034	3,5447
ACUNILNG	31,834	220	,000	2,65479	2,4904	2,8191
ACCOMPLNG	29,279	213	,000	2,69626	2,5147	2,8778

Source: Inquiry to Textile Companies in Portugal, 2007.

Table 12. Total Absorptive Capacity for External Social Capital applied to Learning

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
ACCONLNG	221	3,4908	1,00355	,06751
ACSUPLNG	221	3,4597	,97983	,06591
ACDISLNG	221	3,4240	,90995	,06121
ACUNILNG	221	2,6548	1,23974	,08339
ACCOMPLNG	214	2,6963	1,34714	,09209

Source: Inquiry to Textile Companies in Portugal, 2007.

4.4. Overall performance of internal social capital, technology and external social capital

In the overall analysis of performance, learning and knowledge-including business-cooperation, it appears that the total absorption capacity for internal social capital (individual, group and organization) provides superior results, although very identical to those of technology (solution, testing, integration and import), and in last place appears the external social capital (consumers, suppliers, distributors, competitors and universities).

This analysis confirms the type of the Portuguese textile industry, in which the technology is quite limited due to an adaptation of its technology business as defined by the outside (subcontractors), and weak market power in the absence of marks own work by orders from large international brands and the non-acceptance of an active and differentiation in the markets, with the component of innovation and quality added. The best results were found in

the internal social capital. The explanation lies in the fact that it is a labor intensive sector dominated by a very authoritarian leadership system that imposes a set of fairly rigid rules and behaviors. The technology presents results very identical to the internal social capital, where its technology sector is not identical to an industry with high technology. Finally, the external social capital, with the lowest scores of the three discussed components, reinforces the whole idea of this work, namely that the large subcontractors taxation of limited absorptive capacity of firms in the Portuguese textile industry regarding relations with market players.

The brand image for any sector of activity is part of an overall management system, namely the quality system, environment and R + D + I. The main objective in this work has always been to ascertain whether the Portuguese textile industry organizations in the global context present a comprehensive system of management, in particular, a distinctive ability level of creativity and knowledge management, critical success in establishing a differentiation strategy in the sector and repositioning them to be based on new technologies. ACISC stands for internal social capital for absorptive capacity; ACTEC for technology and ACESC for external social capital.

Table 13. Total Absorptive Capacity for internal social capital, technology and external social capital

One-Sample Test

	Test Value = 0					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper
ACISC	37,816	220	,000	3,10747	2,9455	3,2694
ACTEC	36,138	218	,000	3,10122	2,9321	3,2704
ACESC	32,264	220	,000	2,84604	2,6722	3,0199

Source: Inquiry to Textile Companies in Portugal, 2007.

Table 14. Total Absorptive Capacity for internal social capital, technology and external social capital

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
ACISC	221	3,1075	1,22161	,08217
ACTEC	219	3,1012	1,26996	,08582
ACESC	221	2,8460	1,31137	,08821

Source: Inquiry to Textile Companies in Portugal, 2007.

5. CONCLUSION

5.1. Conclusion

There is a direct relationship between potential absorptive capacity (creation/acquisition) and knowledge, the same is true taking in account a direct relationship between realized absorptive capacity (processing/application) and learning. Companies in the Portuguese Textile industry should improve the level of external absorptive capacity with a closer relationship to consumers, suppliers, distribution, universities and also competitors.

Innovation is a combination of knowledge, potential absorptive capacity (creation / acquisition) with existing incremental learning, absorptive capacity (processing / application).

The analysis of knowledge management and learning as a process of knowledge creation and acquisition allowed to develop and consolidate the dichotomy between learning and knowledge in the developed conceptual model, with the the corresponding attributes. The question on the mechanisms of technology transfer and the type of business cooperation, in which outsourcing takes on a greater role in the Portuguese textile industry made possible to characterize the sector in global terms. The development of the conceptual model allowed to capture the main mechanisms of potential absorptive capacity (creation and acquisition) and realized absorptive capacity (processing and application) on the basis of the dominant theory of (Cohen and Levinthal, 1990), based on their seminal article, in which the model created in this study appears as an extension of the pioneering model, has proven to be a significant point and representative work, which led to the development of the model on the basis of a fairly representative sample of textile sector which validated the results.

The guiding methodology, based on the distinction between internal social capital (individual, group and organization), technology (solution, testing, integration and import) and external social capital (consumers, suppliers, distributors, competitors and universities) has led to simplify what seemed an impossible task to perform. In the typology of business cooperation, the distinction between vertical cooperation (consumers, suppliers and distributors), horizontal cooperation (competition) and institutional cooperation (universities) allowed more deeply into the subject of the phenomenon of absorptive capacity as an instrument enabling evaluate performance and trends of organizations.

An important aspect of this study is the importance for organizations to promote a set of rules and procedures that make possible a greater primacy of group over the individual through initiatives such as the existence of common areas for working instead of individual work spaces among others. The starting point was, in effect, to capture the main movements of the Portuguese textile industry over the form of business cooperation for excellence, outsourcing, and the results made it possible to develop a conceptual model to analyze these movements and mechanisms related to individual behavior.

Thus, for the internal social capital (individual, group and organization), technology (solution, testing, integration and import) and external social capital (consumers, suppliers, distributors, competitors and universities), the results show globally the major division between knowledge and learning potential and realized absorptive capacity and this behavior pattern to deduce the importance of the organization to identify and track their learning because they are a source of explicit knowledge (rules and requirements), and knowledge arises in a more tacit way, difficult to identify and communicate within the organization.

There is, a great difficulty in the transmission of knowledge and learning, although there is a good capacity to learn. In the rotation of components, it was observed that the absolute values were higher for the factor related to learning, namely in the technological domain, the import and integration, which reinforces the idea that the Portuguese textile industry is a sector that survives on the basis of the import and integration of technologies from international subcontractors. There is a dynamic level of the solution and the organization's internal testing. The Portuguese textile companies with greater capacity for absorption in the learning process and consequent absorption of knowledge are the companies of medium and large size. Thus, there is a clear differentiation, firstly, between the micro and small enterprises and, on the other hand, between the medium and large companies in the dynamics of absorption capacity. The size of the Portuguese textile industry remains a critical factor in productive capacity and competitiveness of enterprises in different sub-sectors.

The ultimate goal of the organization is putting knowledge and learning in constant and permanent contact, but this is only possible if we understand the difference between knowledge and learning. Implementing the learning mechanisms that promote the knowledge, the organization should improve the strategic objective to increase its competitiveness at the level of innovation performance. Thus, there is a direct relationship between the realized absorptive capacity (processing and application), and learning, as acquisition and construction of knowledge and innovation indicators of the organization.

5.2. Implications for research and practice

The added value of this research work lies in the possibility of allowing a new approach to validate the distinction between learning and knowledge and the corresponding attributes of the absorptive capacity and, through the conceptual model developed, working with the components of capital internal social, external social capital and technology.

In the practical context, the model can identify the different sectors of the main trends and mechanisms of the industry and measure the intensity in the quadrant of the absorptive capacity for domestic capital, technology and foreign capital.

5.3. Study Limitations

We recognize that this is a static work that fails in providing any dynamism of enterprises and as presented it stands exclusively on information gathered in the questionnaires, although the final results correspond in substance to the overall characteristics of the Portuguese textile industry.

Another limitation is the extrapolation of results based on a single industry, the Portuguese textile industry, labor intensive, which may not be applied to other industries, capital-intensive, or based on technology. The economic and industrial development of Portugal, the mechanisms of competitiveness of Portuguese industry, may be a different reality compared to other countries, notably the phenomenon of industrial relocation to emerging countries. The used statistical technique may not capture the structural essence of responsible behavior in the Portuguese textile industry due to the constant changes affecting the industry today, making it difficult to conduct a causal analysis.

5.4. Future research

To apply the conceptual model developed for the absorption capacity in more dynamic sectors and which are not labor intensive, but technologically intensive, because the model was tested in a more static sector structural and organizational level and expect positive results in their implementation in more dynamic sectors such as technology-based.

A future line of research will be the application of quantitative methods to model-developed absorptive capacity-structural equations, allowing for a more detailed quantification of the results on the absorptive capacity of organizations, in particular through the crossing solution components (technology) and capacity (potential) or import (technology) and acquisition (potential), and assess the number of patents developed or acquired by the organization in a particular sector, industry or services. Verifying the relationship between the type of innovation (product, process, marketing and organizational) in accordance with the knowledge and learning at the level of potential absorptive capacity and absorptive capacity performed.

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