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Cultural Sources for Learning. Study on Micro, Small and Medium-Sized Enterprises in Celaya

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RESUMEN Este trabajo de investigación tiene como objetivo analizar las fuentes de información que utiliza la micro, pequeña y mediana empresa para aprender sobre su actividad empresarial. A través de un análisis cualitativo se entrevistaron a 342 empresas del sector manufacturero de la ciudad de Celaya, Guanajuato, México. Los resultados muestran que las empresas utilizan 26 diferentes fuentes de información para aprender sobre su actividad, las cuales se reagrupan en siete categorías: lógicas interorganizacionales, fuentes especializadas y TICs; fuentes formales de conocimiento; fuentes organizacionales; medios de comunicación y publicidad; fuentes informales de comunicación; experiencia propia del empresario; y ausencia de información y conocimiento. La importancia y uso de cada una de ellas depende del tamaño de la empresa y de la industria a la que pertenece, pero todas ellas contribuyen a desarrollar, consolidar o potenciar vínculos con otras empresas o entes que ayuden a potenciar la capacidad de aprender de la organización.

PALABRAS CLAVE conocimiento, fuentes de información, Mipymes, opiniones.

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Cultural sources for learning. Study on the micro, small, and medium-size enterprises in Celaya

ABSTRACT The objective of this research project is to analyze information sources that micro, small and medium-size enterprises use in order to learn about their business activity. 342 enterprises from the manufacturing sector in the city of Celaya, in Guanajuato, Mexico, were interviewed through a qualitative analysis. The results show that these companies use 26 different information sources in order to learn about their activities, which can be re-grouped in seven categories: cross-organizational logic, specialized sources and ICTs; formal sources of knowledge; organizational sources; communication and advertising mediums; informal sources of communication; the entrepreneur's own experience; and the absence of information and knowledge. The importance and use of each of them depends on the size of the enterprise and the type of industry it belongs to; while they all contribute to developing or promoting bonds with other enterprises or entities that help strengthen the enterprise's learning capability.

KEYWORDS knowledge, information sources, SMEs, opinions.

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Fontes culturais para a aprendizagem. Estudo na micro, pequena e média empresa em Celaya

RESUMO Este trabalho de pesquisa tem como objetivo analisar as fontes de informação que utiliza a micro, pequena e média empresa para aprender sobre sua atividade empresarial. Através de uma análise qualitativa, entrevistou-se a 342 empresas do setor manufatureiro da cidade de Celaya, Guanajuato, México. Os resultados mostram que as empresas utilizam 26 diferentes fontes de informação para aprender sobre sua atividade, as quais se reagrupam em sete categorias: lógicas interorganizacionais, fontes especializadas e TICs; fontes formais de conhecimento; fontes organizacionais; meios de comunicação e publicidade; fontes informais de comunicação; experiência própria do empresário; e ausência de informação e conhecimento. A importância e uso de cada uma delas depende do tamanho da empresa e da indústria a que pertence, mas todas elas contribuem para desenvolver, consolidar ou potenciar vínculos com outras empresas ou entes que ajudem a potenciar a capacidade de aprender da organização.

PALAVRAS CHAVE conhecimento, fontes de informação, Mipymes, opiniões.

Introduction

A business system[1] is formed by groups of companies and organizations that interact competitively and cooperatively, according to their culture and institutions. These interactions determine a competitive potential for the territory where they operate, which constitutes their socio-cultural background. Territorial factors, in turn, influence business groups' performance in a two-way causation process. Any development strategy that seeks to provide competitive advantages to local assets must understand the configuration of these company systems to improve their economic ties, strengthen their relationships of trust, take advantage of their knowledge base and shared learning paths, as well as integrate additional resources and partners.

These configurations are expressed through communication and cooperation channels where there is a flow of resources, ideas, information, knowledge, practices and beliefs. In the new knowledge-based economy, competitive potential is revealed through the dynamics of these networks, where the best performance is achieved through the participation of diverse sources of knowledge, but also through the companies' ability to use those for competitive purposes, whether they are maintenance, monitoring, advancement or market pioneering. One way to analyze this is through the study of sources of knowledge.

This paper is intended to explore the sources of information used by entrepreneurs in micro, small and medium-sized manufacturing economic units in a specific territory, in order to analyze cultural use practices.

The importance of studying the use of information sources for learning purposes lies in its explanatory contribution to company and economy growth (Romer, 1990). Flows between companies and industries are an endogenous factor that explains the economy's growth and competitiveness. In addition, these flows allow for increasing returns on investments (Arthur, 1989) and generate positive effects such as risk and uncertainty reduction, a better distribution of information, shared and lower costs, a coordinated decision-making process and resource allocation, among others.

The performance of economic agents is subject to the dynamics of these flows, since the type of source used will determine to a large extent the interaction and links established with the other actors, as well as the opportunities and threats to face (Lugones et al., 2007). Thus, potential product and process changes as well as management methods and markets can be managed through explicit activities of the company's strategy and also through the interaction with different sources of knowledge (Estrada, 2005). In short, the use of information sources conditions the development of essential competitive capabilities.

Hillmann (2001, p. 48) refers to learning as:

> [...] the processes of mental development, acquisition, expansion and transformation of knowledge, comprehension ability, forms of emotional expression, values, attitudes, behavior, problem-solving skills and abilities [...] Learning processes are mainly taken into account by research on: a) sociocultural formation and development; b) integration of people into groups, organizations and institutions; c) development of values, attitudes, opinions, interests and behaviors as a result of communication and social information situations and conversion processes of objective social situations into subjective contents of consciousness. In sociological terms, historical, cultural, sociocultural, interpersonal and material conditions are particularly significant for learning. Wider learning processes are carried out beyond the individual in social groups and societies, which turn learning into a central dimension of social change and especially of sociocultural evolution. In modern society, which has accelerated changes, the fact that individuals can have successful control over their life and future possibilities depends decisively on their willingness and ability to learn continuously.

Available sources of knowledge provide an environment that influences innovative performance of a company, industry, sector, territory or country. Literature on economics has approached this environment through the study of knowledge

1 A business system can be defined as an analytical framework to compare and contrast the different ways in which economic activities are organized in different institutional contexts, specifically in countries (Foss, 1999). In our case, we extrapolated the approach to the local level. Richard Whitley defines it as specific arrangements of hierarchy-market relationships that have been institutionalized and have had relative success in specific contexts (Whitley, 1992, p. 10). Such arrangements combine preferences for certain activities and skills with different discretion degrees in decision-making processes and coordination of economic stakeholders.

flows[2] produced by direct foreign investment on local companies, mostly large ones and both foreign and domestic (Dutrenit & De Fuentes, 2009). On the other hand, the ability of small companies to use these knowledge flows efficiently has been studied in terms of their absorption capacity, which refers to a company's ability to recognize the value of new and external information, assimilate it and use it for commercial purposes (Cohen & Levinthal, 1990). Companies' absorption capacity reflects their knowledge bases, which can be understood as information, knowledge and abilities to search for innovative solutions (Dosi, 1982, 1988 and 1997). This also implies a learning process. The user-provider theory[3] has a similar approach. It derives from the relational approach to the study of innovation (Lundvall, 1992), where the degree of relationships, exchange of information and cooperation links are the object of study.

Analytical models and frameworks developed for the study of innovation point out that the nature and results of innovative efforts depend to a large extent on the sources of information and knowledge. Therefore, the Oslo Manual (OCDE, 2005, p. 88) states that:

> Innovation activities depend partly on the diversity and structure of the links to information sources [...] Links act as sources of knowledge and technology for a company's innovative activities, ranging from passive sources of information to providers of knowledge and technology, whether it is incorporated or not, and cooperation consortia.

Literature points out that flows are produced by diverse sources or mechanisms. They include human capital mobility and supply relationships (Dutenit & De Fuentes, 2009). Cohen & Levinthal (1990) argue that the absorption capacity can be generated and strengthened through various means: 1) as a byproduct of R&D; 2) as a byproduct of a company's manufacturing operations and 3) as direct investment through staff training or recruitment. On the other hand, innovation surveys reveal the predominance and importance of the different types of links and the factors that influence their use. A study in OECD countries (2000) shows that innovation sources include cooperation with other companies through networks, alliances and joint-ventures, purchase of equipment, involvement with knowledge-intensive specialized services, interaction with scientific institutions, integration of companies through mergers and acquisitions and mobility of highly qualified human capital.

This study addresses various sources of information for learning purposes, delving into the productive experience of the subjects of study in order for interviewees themselves to discover such sources and assess their use.

In conclusion, what are the cultural sources of information used by companies to learn about their business activities? That is the guiding question of this study.

Method

The method used a qualitative hermeneutic exploration to interpret the doxa[4] of the interviews and the organizational context approach, based on the open question: What other sources do you know or use to learn about your business activity?

The information gathered was written and recorded. It was later typed into a Word file, where a number was given to the interview and it was then saved in a folder. A matrix-type Excel database was created. Questions were placed vertically, while cases were placed horizontally.

Analysis Procedure

In order to classify the sources of information, discursive evidence from testimonies was first used to approach operationally the theoretical-conceptual structure, using the basic criteria mentioned by interviewees. This is how 28 categories were found. One of them relates to lack of

2 Information flows are transfers of knowledge that result in a productivity increase of the receiving agent or easy access to a new market (Blomström and Kokko, 1998). The former occurs when "the entry or presence of multinational companies' subsidiaries cause productivity or efficiency benefits in local firms and multinationals are not able to internalize the total value of these benefits." Market access flows occur when a multinational's export activities reduce initial export costs for domestic firms (Aitken et al., 1997).

3 Direct or indirect commercial relationships between independent entities where the users buy the suppliers' products and use them as part of their production process are understood as user-provider relationships (Hernandez, 1998).

4 It refers to opinions or empirical knowledge.

knowledge about sources. Another one refers to not using any of them. This relates to the quantitative analysis. Concerning the qualitative analysis, descriptive statistics were used.

Description of Information Sources

According to data from Mexico's National Institute of Statistics and Geography, Inegi (2010), in the Celaya municipality there are 1,707 economic units, which were analyzed for our study. The Decision Analyst STATS software was used for sample calculation with a 5% error margin, a 50% selection probability and a 95% reliability level. These design parameters determined a sample of 314 companies, which represents 18% of the group. During fieldwork, the questionnaire was applied to 342 companies. Company owners or managers where interviewed, obtaining a 20% representativity sample.

Sample in Terms of Size

Out of the 342 interviews, 258 correspond to micro enterprises, representing 75,43% of the sample. Small enterprises (65) correspond to 19%. Medium-sized enterprises were 10 and they represent 2,9%. Finally, five large companies represent 1,46% of the sample. Four companies did not disclose their number of workers. Therefore, their size could not be determined.

Sample in Terms of Lines of Business

The sample focuses on the manufacturing sector, which has a 67% participation, followed by the services sector, with a 12% of surveyed companies. Construction and trade represent 7% of the sample each. Agriculture corresponds to 3% of the companies surveyed. There was no response from 4% of the firms visited.

Study Description

The Mexican productive structure is undergoing a transformation. Services have a dominant position, while manufactures follow a downward trend with some fluctuations, representing 25,8% of the GDP in 2003. This reflects a territorial restructuring process where states may be moving or reinforcing their productive structure. In the case of Guanajuato, after some productive investments that started in the 70's and 80's, its industrialization process is being strengthened (Garza, 2009). It continues to have a strong tertiary sector that has developed hand in hand with its population dynamics (Estrada, Carcamo & Martin, 2013). The three metropolitan areas and the two most

TABLE 1. Distribution of the General Sample by Sector and Size

	COMPANY SIZE					
ACTIVITY	**Nc**	**Micro**	**Small**	**Medium**	**Large**	**Total**
Agriculture and cattle industry	0	4	4	1	0	9
Construction	0	15	6	1	1	23
Food industry	1	139	25	4	1	170
Beverage industry	0	6	1	0	0	7
Textile industry	0	15	4	1	1	21
Chemical industry	0	3	0	1	0	4
Plastics industry	0	2	3	0	2	7
Mineral industry	0	3	3	0	0	6
Metal industry	1	3	3	0	0	7
Furniture industry	1	7	0	0	0	8
Commerce	1	16	6	0	0	23
Services	0	36	6	0	0	42
NC	0	9	4	2	0	15
TOTAL	4	258	65	10	5	342

Source: Own elaboration

important cities of this federal entity have a polycentric development pattern.

The Celaya metropolitan area, consisting of the Celaya, Villagran and Cortazar municipalities, is the second most important in the state after Leon. It is located in the Bajio industrial corridor, where secondary activities are concentrated.

Manufacturing has been gaining importance in Celaya, since its participation is over 50% of the municipal GDP. The most important areas are appliances (13,4%), iron and steel (9,2%) and auto parts (7.5%). The first two areas concentrate all of their activity in the state of Guanajuato, while auto parts represent 40% of the state total. Other areas, especially food-related (mainly trading and food preservation) as well as chemical and plastic product companies also have some relevance. In Celaya, as in other urban concentrations, construction, infrastructure, restaurants and hotels, education, financial services, education, transportation and commercial activities are developed (Unger, 2009).

The dynamics of these areas suggests a pattern of municipal specialization based on agglomeration economies and large-scale plants, mainly in manufacturing companies. For example, in the area of appliances the importance of the Mabe plant must be highlighted, as it is even present in export markets. In the iron and steel area, Siderurgica del Bajio stands out, as well as another group of auto parts and chemical companies that dominate the Celaya cluster, whose dynamics seems to be influenced by the proximity of the industrial city of Queretaro (Unger, 2009).

Development

The exploratory analysis reveals that employers use 26 different sources to learn about their business activity. These answers were given in 83% of the cases studied. Nevertheless, 13% of interviewees state that they do not use any source of information for learning purposes. Distribution of answers on sources of information used by employers is shown in Table 2.

The most common sources of information were the Internet and magazines (identified by at least 17% of interviewees). Also, the productive experience of other companies and their own was mentioned by 12%. A third group of sources includes courses, books, fairs and catalogs, which were mentioned by between 6% and 9% of interviewees. Finally, suppliers and relatives were also mentioned as main sources of knowledge, representing between 4 and 6%.

Another set of 16 types of sources is known or used with a very low percentage. It is a diverse mix of free-access sources which are cataloged and have tacit and relational components. Apparently, its nature is not very different from the mix found in the most commonly used or known sources.

As far as size differences, the data is disperse, so an influence on the use of information depending on company size might be assumed. A range correlation test allows us to find a moderate correlation between micro and small enterprises, but it is lower for medium-sized businesses[5]. In this segment there are some peculiarities, such as a higher percentage of people who use trade fairs and magazines instead of other sources such as the Internet, inquiries to the government, seminars, inquiries to institutions, consultancy, their own experience or inquiries to suppliers and relatives.

After comparing these data with empirical studies, we found that the approach used by the research carried out in other places has focused on the influence of information sources on the companies' ability to innovate, while our focus is on the development of general business abilities and rather basic skills. We assume, however, that the use of information sources could trigger an innovative potential in this limited socio-territorial and cultural context.

A non-exhaustive review of 22 empirical studies on information sources was carried out (Table 3 and Annex I). Unlike our study, cataloged sources (publications and the Internet) were very important in only a third of them. However, the importance of cataloged sources increases in studies from Mexico and in the ones dealing with small and medium-sized enterprises (SNEs).

As far as own experiences seen as information sources, two thirds of respondents found that they are very important. This trend is seen in studies from developed and Latin American countries. In the Mexican case, some studies do not consider this source, which is why it seems to be of low importance. Nevertheless, for in-depth studies, and

5 Correlation coefficients between the categories of knowledge or use of information sources by micro and small companies was 0,78, for small and medium-sized enterprises it was 0,48 and for micro and medium-sized enterprises it was 0,43.

TABLE 2. Information sources used for learning purposes by entrepreneurs of micro, small and medium enterprises in Celaya

	COMPANY SIZE			
SOURCES OF INFORMATION FOR LEARNING PURPOSES	Micro	Small	Medium	Total
Internet	22,86%	40,00%	20,00%	26,31%
Magazines	15,89%	18,46%	40,00%	17,25%
Other companies' experience	12,00%	12,30%	20,00%	11,98%
Direct experience	12,40%	12,30%	0,00%	11,69%
Courses	8,91%	6,15%	20,00%	9,06%
Books	6,59%	9,23%	10,00%	7,01%
Fairs	5,81%	7,69%	30,00%	6,72%
Catalogs	6,20%	6,15%	10,00%	6,14%
Suppliers	5,03%	7,69%	0,00%	5,55%
Relatives	3,10%	4,61%	0,00%	3,50%
Inquiries to the government	1,16%	3,07%	20,00%	2,33%
Seminars	1,93%	1,53%	20,00%	2,33%
Television	1,93%	3,07%	0,00%	2,04%
Newspapers	2,32%	1,53%	0,00%	2,04%
Training sessions	1,93%	1,53%	0,00%	1,75%
Inquiries to institutions	1,16%	3,07%	10,00%	1,75%
Chambers of commerce	1,16%	3,07%	0,00%	1,75%
Formal studies	0,77%	3,07%	0,00%	1,46%
Conferences	0,77%	4,61%	0,00%	1,46%
Advertising	1,55%	0,00%	0,00%	1,17%
Experience in other jobs	0,77%	3,07%	0,00%	1,17%
Certifications	0,38%	1,53%	0,00%	1,17%
Workshops	0,77%	0,00%	0,00%	0,58%
Consultancy	0	1,53%	10,00%	0,58%
Meetings or assemblies	0,77%	0,00%	0,00%	0,58%
Inquiries to customers	0,38%	0,00%	0,00%	0,29%
Does not know	3,10%	0,00%	0,00%	2,33%
None	13,95%	9,23%	0,00%	12,86%

Source: Own elaboration

in particular for those related to learning and innovation abilities, own experiences and internal sources turn out to be the most important sources of information. Thus, the evidence indicates that the most important sources of technological information and innovation for Mexican companies are themselves (Arvanitis & Villavicencio, 1998; Lopez-Leyva, 2003). In addition, it is remarkable that the development and modification of products and processes is mainly done by companies on their own. Production departments, followed by marketing and engineering areas, are seen by innovative companies as the most important sources of information (Conacyt, 1999 and 2003). There is evidence that manufacturing companies in general prefer internal to external sources of knowledge and that they consider the experience, knowledge and skills of their engineers, technicians and workers as the most relevant sources of innovation (Corona & Hernandez, 2000). These are cultural sources of learning.

TABLE 3. Summary of the evidence found in empirical studies (22 cases)

SOURCES OF INFORMATION AND KNOWLEDGE	TOTAL	% (22)	TOTAL DEVELOPED COUNTRIES	% (6)	TOTAL IBERO AMERICA	% (17)	TOTAL LATIN AMERICA	% (15)	TOTAL MEXICO	% (9)	TOTAL SMES	% (3)
Other companies	5	23%	3	50%	3	18%	2	13%	1	11%	0	0%
Specialized magazines	4	18%	2	33%	3	18%	2	13%	2	22%	1	33%
Books	1	5%	0	0%	1	6%	1	7%	1	11%	1	33%
Fairs and expositions	7	32%	2	33%	6	35%	5	33%	4	44%	0	0%
Competitors	6	27%	1	17%	6	35%	5	33%	3	33%	0	0%
Internal groups	14	64%	4	67%	12	71%	10	67%	5	56%	1	33%
Suppliers	18	82%	6	100%	14	82%	12	80%	6	67%	3	100%
Customers	19	86%	5	83%	16	94%	14	93%	8	89%	3	100%
Univ. and R&D Centers	4	18%	3	50%	3	18%	1	7%	0	0%	0	0%
Government	1	5%	1	17%	0	0%	0	0%	0	0%	1	33%
Training	2	9%	1	17%	1	6%	1	7%	0	0%	0	0%
Conferences and symposia	2	9%	0	0%	2	12%	2	13%	1	11%	0	0%
Internet	2	9%	0	0%	2	12%	2	13%	2	22%	2	67%
Consultants	6	27%	1	17%	6	35%	5	33%	3	33%	1	33%
Patents	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%

Note: The categories represent relevant sources. The numbers represent the studies that determine greater preponderance of use. The percentage column shows in parentheses the number of studies included in the previous total column.

Source: Own elaboration based on Annex I

Sources including some form of training and fairs also had important results in half of the studies reviewed. In Mexico, this source is more commonly emphasized. The studies reviewed on SMEs do not allow us to confirm our findings, since this information is not disclosed. On the other hand, it is worth noting that fairs and expositions have more relevance in Ibero-America and Latin America than in developed countries, where there is greater interest in universities and research centers.

Our review also shows that customers are the most important source of information, followed by suppliers. This situation is in stark contrast with our evidence, because although suppliers are often mentioned, customers are recognized by only three out of every 1,000. This difference might be given by an interpretation of our interviewees on the sources of information used to improve their own entrepreneurial skills.

As far as differences influenced by size, Barañano (1998) and Quadros et al. (2001) found some evidence that could support our results. In general, they argue that less formal sources of information are more accessible and affordable by SNEs. Specific studies that only consider small and medium-sized companies also point towards this, mentioning free-access cataloged sources besides own experience (CIPI, 2003; Ollivier & Thompson, 2009).

After this revision, a preliminary conclusion might be that companies set certain regular patterns in terms of the sources of information used for their business activity. Customers, suppliers and their own productive experience are very important (including the work of their internal groups and employees). For the Ibero-American context, trade fairs and expositions can be added to this list and in the case of SMEs, cataloged sources may also be mentioned.

Our results allow us to infer that for our study on micro, small and medium-sized enterprises in Celaya the main sources of learning are personal contacts, education providers, fairs, suppliers and

families. The main external sources are free-access ones, such as the Internet, magazines, books and catalogs. Regarding internal sources, the main one would be each participant's own productive experience.

Qualitative Assessment

In order to achieve the objective of the study, listing the sources used is not enough. It is necessary to analyze them based on their cultural practices of use by entrepreneurs. Therefore, we decided to group sources based on their purposes, taking into account cultural practices in terms of their consultation, implications, degree of social complexity (as far as use of their codification for knowledge and socialization in their fields), availability, reliability and consistency.

Several attempts were made to differentiate and group the use of certain sources of information and knowledge in relationship to others. A logical ordinal criterion was established in those attempts, in order to find the range between most and less adequate and reliable sources and to group them as excellent, good, regular, low, bad and absent. This aspect was rather operational, but many of these criteria are likely to dismiss the complex cultural processes that actually take place in peripheral areas, which according to this analysis are seen as "disorganization" or "bad habits" of entrepreneurs. Therefore, organization relates to power, "what ought to be", given by "modernity" and "evolution" of the sources, together with the inductions from "developed" societies.

This type of evaluation does not allow us to see the big inequalities in terms of the cultural capital of society's actors, the complexity of how ideas are put together as elements from various sources (science, doxa, religion, ignorance, empirical knowledge, etc.) and perspectives, interwoven into a kind of "bricolage"[6], where knowledge and ideas (in different sources and configurations) come from Latin American business entrepreneurs and in the case of Mexico, how micro, small and medium-sized enterprises operate.

On the other hand, the focus of the ordinal question makes some sources appear as if they were better than others or as if the purpose was to improve inferior criteria with superior ones, when in fact they can be simultaneous. Therefore, sources were grouped according to the purpose that they were designed for, while being aware that their diversity should not be seen as normative. Then, their cultural use value and availability is reconsidered, based on analogy[7] (see Annex II). This way, the list considered seven groups:

1. *Inter-organizational logic, specialized sources and ICT.* This groups includes inter-organizational processes where information on a particular field shares a target practice level. Specialized sources are also included in this group. They provide specific information on products or services. Magazines and catalogs, knowledge generated from direct research (in this case, from inquiry to institutions), learning acquired in fairs and the internet as the ICT medium of choice par excellence are the sources of information included in this group.
2. *Formal sources of knowledge.* It refers to institutionalized ways to learn (formal learning). In this case, it relates to institutions, consultants, public entities or people with scientific knowledge.
3. *Organizational sources.* They are determined by public and private institutions and have been constructed from conventions in their own field.
4. *Media and advertising.* It refers to the most common ones, such as radio, television and newspapers. On the other hand, the purpose of these sources is to sell and they are designed to persuade consumers to purchase goods or services.
5. *Other cultural forms of information.* It refers to informal communication among groups of a specific culture. In this case, it refers to business information discussed by relatives.
6. *Not related to other sources.* It refers to cases where the only source of knowledge is that of the entrepreneur.

6 This is a concept created by Claude Levi-Strauss to explain how ideas are reconstructed and their symbolic impact on the reinterpretations that occur in different manifestations of cultural practices.

7 The strategy of the approach is reconsider the problem of how ideas are constructed, given distant realities and available resources and cultural ideas, mixed into a sort of amalgam of different configurations. The strategy is seeing that different symbolic order, which changes depending on conditions and possibilities.

7. *Lack of information and knowledge.* It refers to ignorance or lack of sources.

It is important to point out that according to the testimonies of entrepreneurs, no other sources were used. This is serious, because it shows a lack of innovation. Patent consultation, observatories, specific Internet articles or information from relevant portals about productive or material processes could have been used.

Once the grouping criteria were established, their weight was analyzed (Table 4).

Our analysis indicates that about 12% of the companies use an inter-organizational logic, specialized sources and ICTs as sources of information to learn about their business activities. In this category, magazines and the Internet are the main sources of information for micro, small and medium-sized enterprises. The friendly and educational aspect of the Internet has widened the scenario for companies, since information on national and international markets and products can be accessed. The coordinated use of the Internet can promote competitive intelligence in companies. Medium-sized companies are characterized by their attendance to fairs and expositions, as one-third of them uses this source of information. Inquiries to institutions are important, as they reflect the degree of association between higher education institutes or research centers and companies. Although the relationship between the number of companies and their connection to research is very low, the few companies that use it consult technological centers and universities for specific technical issues.

Only 3% of companies use formal sources of information. The main source used by micro enterprises is books, followed by seminars and training sessions for skill development. Micro enterprises are not used to get advice from specialists with qualified opinions. We assume that it is due to their economic conditions. Books, courses and conferences are the main sources of information for small businesses. Medium-sized companies attend seminars, mainly, although consultancy is also mentioned, together with courses and books. These are more commonly used by medium-sized companies than by micro and small enterprises. Courses are offered by providers, agents and government entities to small and micro entrepreneurs.

The use of organizational sources for obtaining knowledge and information represents 3% of the sample. One of the most interesting ways of learning is through the experience of other companies. There are testimonies based on social capital, due to trust and good relationships. For example, when companies' representatives visit other firms, they support each other through advice, establishing good relationships, productive cooperation, exchange of ideas and information concerning their productive chain. Some other companies resorted to some kind of espionage by copying processes or products, as some interviewees say. This form of learning is more common in medium-sized companies (20%) than in micro and small enterprises (12%). The customer's direct opinion is seen as a gesture of appreciation or concern, even though clients will hardly speak badly of a product with the company's owner. Systematic complains are perceived as a gesture of appreciation, although we know that human interaction flows better when people talk directly. It is important for companies to know what consumers think, so that it has an effect on products, services or innovation. These cases only take place in micro enterprises. Social capital is interwoven through suppliers and this builds a social market. According to the testimonies, there is a close relationship between customers and suppliers, which is characterized by confidence, constant support and exchange of information. This relationship exists in 5% of micro enterprises and between 7% and 8% in small companies.

The tendency to participate in specific guiding programs for companies, chambers of commerce, meetings and certifications has very low levels, regardless of company size. Few companies see their experience in other jobs as a source of information to learn about the activities of their current company.

The media and advertising are barely used as sources of knowledge, with less than 2% of use by the companies. The media includes television, newspapers and advertising.

Concerning other sources of information, the cultural importance of family in the chain of knowledge transmission[8] must be mentioned.

8 We refer to the presentation during the 8th International Congress of Organizational Analysis - Individual and Society: Networks and emerging forms of organization in the city of Monterrey, Nuevo Leon and the topic of limits and possibilities of learning ways in manufacturing sector of micro, small and medium-sized companies. Case of Celaya Guanajuato.

TABLE 4. Main sources of information used for learning purposes, classified by enterprise size

SOURCES OF INFORMATION FOR LEARNING PURPOSES		SIZE			
General	**Particular**	**Micro**	**Small**	**Medium**	**General average**
Inter-organizational logic, specialized sources and ICTs		10,38%	15,07%	22%	11,63%
	Inquiries to institutions	1%	3%	10%	
	Magazines	15,89%	18,46%	40%	
	Fairs and expositions	6%	7,5%	33,3%	
	Catalogs	6%	6%	10%	
	Internet	23%	40%	20%	
Formal sources of knowledge		2,7%	3,46%	7,5%	3,02%
	Workshops	1%			
	Consultancy		1,5%	10%	
	Courses	1%	6%	10%	
	Books	7%	9%	10%	
	Seminars	2%	1,5%	20%	
	Trainings	2%	2%		
	Formal studies	1%	3%		
	Conferences	1%	4,5%		
Organizational sources		2,70%	3,84%	5%	3,10%
	Experiences from other companies	12%	12%	20%	
	Inquiries to customers				
	Suppliers	5%	7,5%		
	Inquiries to government	1%	3%	2%	
	Chambers of commerce	1%	3%		
	Certifications		1,5%		
	Experience in other jobs	1%	3%		
	Meetings or assemblies	1%			
Mass media and advertising		1,93%	1,53%	0%	1,95%
	Television	2%	3%		
	Newspapers	1,5%	2%		
	Advertising	1,5%			
Other cultural sources of information		3,10%	4,61%	0%	3,50%
	Relatives	3%	4,5%		
Not related to other sources		12,30%	11,69%	0%	11,69%
	Direct experience	12%	12%		
Information and knowledge		8,52%	4,61%	0%	7,60%
	Doesn't know	3,1%			
	None	13,95%	9,23%		

Source: Own elaboration

These results imply that information was not only used for child rearing purposes. It is constant, frequent, alive and always available, since there is confidence among family members and it is possible to seek help from them based on their experience.

Direct experience is fundamental, but it is also self-referred to justify company isolation, which we have called "the labyrinth of solitude". In micro and small enterprises this behavior characterizes company culture, with a 12%.

Concerning the lack of information and knowledge, out of every 100 people about 6% don't know anything about sources, mainly in micro enterprises. In summary, the following can be said:

- The entrepreneur's experience as the only source of learning is the most important, with a 11,69% representation. It is especially important for micro and small companies.
- Inter-organizational logic, specialized sources and ICTs are ranked second, with 11,63%. These sources are used by the three types of companies analyzed.
- Third, we have the lack of information and knowledge, with 7,60%. It occurs mainly in micro enterprises and, secondly, in small businesses.
- Fourth, we have other cultural forms of information with 3,50%, mainly in small companies, followed by micro enterprises. There are no cases in medium-sized companies.
- The fifth position is for organizational sources, with 3,10%. Medium-sized companies use then more often, then small companies and finally micro enterprises.
- The sixth position is for formal sources of knowledge, with a 3,02%. The three sizes of companies studied use them, mainly medium-sized enterprises, followed by small companies and then micro enterprises.
- The media and advertising represent 1,95%. They are used only by micro and small businesses.

As a conclusion...

Culture is our framework for interpretation. Knowledge and learning are given in the coding-decoding relationship in various information modes. This implies that an individual has the cultural capital capability of interpreting information when it is needed. That symbolic appropriation is called learning. Learning of conceptual contents is called knowledge. There can be learning of skills or non-cognitive learning, as in the case of values.

The cultural sources of information used by companies for learning purposes can be studied from different viewpoints. Existing approaches have privileged a quantitative assessment about their importance. Without undermining sectorial influence and size, we can state that certain regularities prevail for all kinds of industries, such as the importance of customers and suppliers as sources of information and the productive experience. This is expressed in functional areas, such as the production and marketing departments or in the expertise of groups of workers, managers or owners. For developing countries and in particular for the Latin American region, the information from magazines, books or catalogs can be very important, besides Internet use.

From the perspective of the qualitative approach, multiple possibilities are still unexplored. Constructing an analytical framework is a challenge, given the multiple relevant categories such as confidence, adequacy, complexity, complementarity or consistency of the sources, in addition to the dual nature of knowledge, which is tacit and codified, along with its generation, appropriation and use processes. This is demonstrated by the "family" category, which had not been seen as a major source of information for enterprises, especially by small and medium-sized companies. Our work has focused on assessing sources based on their purpose and proper use.

From the characteristics and assessment of the information sources used by micro, small and medium-sized enterprises in Celaya to learn about their business activities, what can be said about business systems? They are diverse, since entrepreneurs identified 26 different ways to obtain information for learning purposes. However, the use of these sources does not privilege interactive channels, but rather purchase or transaction channels. This does not have an impact on the generation of information flows or the development of absorption capacities. Knowledge sources can be summarized as the use of information from specialized passive sources, knowledge obtained from own experience, institutionalized sources and other cultural sources. Organizational sources allow companies to make decisions, as well as self-referred experience.

Even in the case of micro, small and medium-sized enterprises we find differences that can be seen in formal learning mechanisms, organizational sources and linking partners.

These results allow us to know the sources of information and knowledge used by companies in Celaya. Based on them, links with organizational sources can be strengthened with trust relationships and integration through specific programs and policies supported on educational institutions to improve learning. However, the evidence indicates that the government is absent, as it fails to inform about program incentives or does not disseminate its objectives effectively.

ANNEX I. LITERATURE REVIEW ON INFORMATION AND KNOWLEDGE SOURCES

AUTHORS	Daim et. al. (1998)	Eurostat (2008)	Drouvot & Fensterseifer (2002)	Eurostat (2008)	Eurostat (2008)	Barañano (1998)	Quadros et. al. (2001)	Porto et. al. (2003)	IBGE (2007)	INDEC (2006)	INE (2008)	OCYT (2004)	DICYT (2006)
REGION / COUNTRY	US	GER	Rhône -Alpes FR	FR	SP	PT	Sao Paulo BR	BR	BR	ARG	**CHI**	**COL**	**URU**
SECTOR	**Electronics**		**Informatics - Mechanics**			**Manufacture - Construction – Services - Commerce**	**Manufacture**	**Telecommuni-cations**					
			SMEs			**All**							
Other companies		+		+		+					+		
Specialized magazines	+					+							
Books													
Fairs and expositions	+					+		+					
Competitors						+	+		+				
Internal groups		+		+	+	+		+	+	+	+		+
Suppliers	+	+	+	+	+	+	+		+	+	+	+	+
Customers		+	+	+	+	+	+	+	+	+	+		+
Universities and R&D Centers		+			+	+		+					
Government			-										
Trainings	+											+	
Conferences and symposia								+					
Internet													
Consultancy					+					+			+
Patents													
SMEs differences						XX	XX						

(+) indicates importance for perception or preponderance of the response frequency and (XX) indicates the studies that find significant differences.

AUTHORS	Inegi (2007)	Pastor & Medina (2008)	Dutrenit & Vera-Cruz (2000)	Estrada (2006)	Olivier & Thompson (2009)	CIPI (2003)	Conacyt (1997)	Coecytjal (2003)	Lopez-Leyva (2003)
REGION / COUNTRY	MX	San Luis Potosi MX	MX	Guanajuato MX	Chihuahua MX	MX	DF MX	Jal MX	Sin MX
SECTOR		Metallurgical	Chemical industry	Manufacture	Manufacture	Manufacture – Commerce - Services	Manufacture	Manufacture	Manufacture
SIZE		All	All	All	SMEs	SMEs	Medium-large	All	All
Other companies	+								
Specialized magazines		+			+				
Books					+				
Fairs and expositions		+		+			+		+
Competitors	+		+					+	
Internal groups		+	+	+		+	+		
Suppliers	+	+			+	+	+	+	
Customers	+	+	+	+	+	+	+	+	
Universities and R&D Centers									
Government									
Trainings									
Conferences and symposia		+							
Internet					+	+			
Consultancy			+			+			+
Patents									
SMEs differences									

(+) indicates importance for perception or preponderance of the response frequency and (XX) indicates the studies that find significant differences.

Source: Own elaboration based on Suarez and Anllo (2008), Portos et. al. (2003) and other sources.

ANNEX II. CULTURAL COMPOSITION OF INFORMATION AND KNOWLEDGE SOURCES

INFORMATION AND KNOWLEDGE SOURCES	
INTER-ORGANIZATIONAL LOGIC, SPECIALIZED SOURCES AND ICTS	
Inquiries to institutions	Institutions can work with companies with available and relevant information about a problem, in order to generate new knowledge through research. Equipment, laboratories and a chain of knowledge transmission may have an interesting impact on the dissemination of knowledge about cases in the region. The relationship and coordination between higher education and research institutions with companies is vital, especially for shifting towards innovation.
Magazines	Magazines play an essential role, especially journals specializing in science, specific technology or business areas, such as guilds. Magazines in Mexico are not very diverse or specialized. Their limitation is given by poor circulation coverage. Electronic versions of magazines are now a strategic element for the dissemination of knowledge.
Fairs	There are two kinds of fairs and expositions. In some fairs, products are only displayed. Technological fairs are a different kind, but both are important. The former presents final products to other producers and consumers, which allows them to see the latest advances. That improves the producers' level of social practice. On the other hand, technological fairs emphasize technology development. These events can broaden the landscape for entrepreneurs, since important technological developments, product improvements and innovations are presented. In Mexico, there is some potential for improving and adding value or symbolic capital to those learning spaces.
Catalogs	Catalogs or brochures are intended to provide summarized information on products, but they are rather technical fact files that highlight their characteristics. They are printed on paper and now they are also available online.
Internet	Internet is referred to as an excellent tool that has invigorated society in terms of information search. However, we know that most searches are blind and random. Intelligent searches allow you to obtain relevant information and reach your objectives successfully. As a source of information, it is important when it relies on tools such as competitive intelligence.
FORMAL SOURCES OF KNOWLEDGE	
Workshops	Workshops are a creative way to obtain knowledge and transformation of skills. Their premise is "learning by doing" or "learning by transforming". Workshops are intended to put knowledge into action.
Consultancy	It is based on the knowledge of specialists who suggest specific actions to be done by a company, based on their experience and technical knowledge. The consultant has the "didactic" ability to describe complex problems in colloquial words. It is important to evaluate consultants in terms of results, professionalism and dedication. Consultants enjoy certain freedom, because they do not depend directly on a company. Therefore, they may have objective opinions that do not depend so much on the company's power, but in the end they are basically employees.
Courses	Courses are more cognitively-oriented than training sessions. They are important because they can provide the required foundations on any specific kind of topic, especially applied knowledge.
Books	Books have historically been a fundamental source of knowledge and this implies a search for knowledge and a reading culture. However, reading in our country is very limited due to low comprehension levels, poor access and lack of variety and updated topics. It remains one of most appropriate ways to get information, especially for people with good reading competences and self-educated individuals.
Seminars	Seminars address issues comprehensively and openly. They are not classes or workshops. They resort to the participants' knowledge to better understand the issues discussed, supported by readings or other relevant sources of information.
Training sessions	Training sessions allow attendants to learn about specific topics or tasks. They emphasize abilities and skills. They have a rather practical nature with some technical knowledge. They are not intended for attendants to "learn" about a subject in depth.
Formal studies	Formal studies are the best way of obtaining information and knowledge. They may refer to medium or long-term education. Increasing the entrepreneurs' cultural capital is important. Time is often a problematic aspect for many of them. However, it is important for successful study completion.
Conferences	Conferences are another source of information. They are not very regular in corporate culture, but expert points of view on scientific or technological issues are very important. However, it is important to leave aside "motivators" or "gurus" who have dominated the context of conferences.

ORGANIZATIONAL SOURCES	
Experience from other companies	It is seen as an excellent source of knowledge and information when it is systematic, for example through competitive intelligence, with clear comparative indicators. However, from the empirical viewpoint of company owners, it is interesting but limited, since there is not a rigorous comparative evaluation, but rather partial learning from non-systematic observation. Topics like product features and systems can be discussed. The level of the discussion also depends on coverage. If members of the same local field are involved, it is very limited. If it includes regional, national and even international experiences, it may be more significant.
Inquiries to customers	Similarly, inquiries to customers should be systematic and detailed, so that they can be part of follow-up processes. Suggestions from customers should be aimed at improving a product or service. They should not be informal, as in situations where customers are asked a question and they only confirm or deny their impression about the product or service, without further innovation or improvement purposes from the company.
Suppliers	Current and potential suppliers have relevant information for decision-making in terms of science and technology. They can and should provide detailed product specifications and technical requirements. They must provide satisfactory product information. Entrepreneurs are encouraged to get expert advice from consultants.
Inquiries to government	The government has various agencies and departments in charge of providing information. Advice on a specific issue can be requested from the corresponding government body.
Chambers of commerce	Chambers of commerce are intermediate bodies empowered to promote and support their members. In some cases, their representative's role is limited, but other chambers have had a good advising and managing impact. Expanding and promoting their services for company owners can be the best option, since representing several companies guarantees lower costs and synergy creation.
Experience in other jobs	The entrepreneurs' experience in other jobs is useful but limited, since its practical character requires immediate results without the chance to process or document the experience or the knowledge derived from it. Experience in other jobs is usually acquired from other company owners, meaning that it is not self-referred.
Meetings or assemblies	Meetings or assemblies are interesting for self-learning of groups of producers or members of a company, but some of its risks are group self-indulgence, assignment of roles to participants, complains and collective catharsis. It depends a lot on its own dynamics. They are essential in democratic planning.
Certifications	Certifications are intended to guarantee processes where the system is interconnected to various actions and variables related to the main activities or the whole. Certifications as cultural sources should not be a goal, but a means for companies to project themselves in the market.
MEDIA AND ADVERTISING	
Television	Television is a means of communication but it is not a reliable source of information, as it can be very limited (except for technological news shows and specialized science and technology shows and documentaries, mostly on cable or satellite TV). The purpose of commercial television is entertainment. As a source of information, the viewer would have to wait for topics of interest to be programmed.
Newspapers	Newspapers have different kinds of information: news, advertising and some science and technology sections. Information is limited (except when there are feature articles). Detailed information is not provided nowadays, since the tendency of the media is towards social construction of events and therefore sensationalism is resorted to. Detailed information on science or technology is not published because the public can get bored. Also, this information is not profitable.
Advertising	Advertising focuses on selling. It may have important information regarding certain characteristics listed (without much specification), but it won't provide details, especially when there is information that may affect its selling purposes. Persuasion, as a selling tool, can exaggerate the characteristics or properties of the product or service offered.
OTHER CULTURAL SOURCES OF INFORMATION	
Relatives	The experience of relatives in similar economic activities is a significant part of social capital for company creation and maintenance. It is a valuable source of common knowledge in terms of cultural capital, but it has limitations related to arbitrariness of the individuals consulted and their real knowledge on the issues mentioned. However, this source should not be ignored.

NOT RELATED TO OTHER SOURCES	
Direct experience	Direct experience is an empirical form of knowledge. The problem with it is that it is self-referred. As practical knowledge, it is functional, but it does not go deeper because that is not its purpose. It is implicit (for those who have it) and sometimes it is disseminated with high doxa and arbitrariness levels.
LACK OF INFORMATION AND KNOWLEDGE	
Doesn't know	It states explicitly that the individual does not know any source to find the necessary information for production and innovation.
None	Lack of response

Source: Own elaboration based on Suarez & Anllo (2008), Portos et. al. (2003) and other sources.

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